JANUARY • 1949

Vol. 6 • No. 1

LONDON GUARANTEE BUILDING
Michigan Avenue at Wacker Drive
THE HOME OF

finish

MONTHLY TRADE PUBLICATION
Established January, 1944
Published by
DANA CHASE PUBLICATIONS
360 North Michigan Avenue
Chicago 1
Telephone CEntral 6-1229

A trade publication devoted to the interests of the manufacturers of major home appliances and allied metal products. Covers plant facilities and manufacturing problems from raw metal to finished product, with special emphasis on metal finishing.

Free controlled circulation to management, purchasing, engineering and key plant personnel in companies intimately connected with the field covered. To others, subscription price $3.00 per year. Foreign subscription price (U.S. funds) $5.00 per year.

Editor and publisher, DANA CHASE. Associate editors, PROF. A. I. ANDREWS and PROF. R. M. KING.

Acceptance under the act of June 5, 1934, at Aurora, Illinois, authorized January 7, 1948.

Features

Industrial News

Miscellaneous

finish

FROM RAW METAL TO FINISHED PRODUCT

From the Editor's mail . . .

interested in "safe transit" program

Gentlemen:

"I read a recent article in the December issue of Finish pertaining to the progress of the Packaging and Shipping Committee of the Porcelain Enamel Institute. It is my understanding that this committee recently adopted tentative test procedures for pre-test shipment of porcelain enameled products.

"We are manufacturers of electric household refrigerators, home freezers and electric ranges, and, although we have our own pre-shipment tests which we use on these products, we would like to become familiar with the Porcelain Enamel Institute committee's recommendations."

O. I. DeGraw, Packaging Engineer
Gibson Refrigerator Company
Greenville, Michigan

"available to students"

Dear Sir:

"I have enjoyed the material in your issues in the past, and would like to continue receiving Finish. The magazine will be available to the students."

Joseph A. Pask, Associate Professor
Dept. of Ceramic Engineering
University of California
Berkeley, Calif.

"a good job"

Gentlemen:

"Many thanks for your letter of October 23, and for the two copies of your October FINISH which arrived a few days ago. Its presentations concerning the Lustron developments, of special interest to me, were admirably done. In fact, the whole magazine is a good job."

W. V. Burnell
Stone & Webster Engr. Corp.
Boston, Massachusetts

"the only journal"

Dear Sir:

"We have received an intimation from your Circulation Department regarding the renewal of our subscription to Finish, and we have instructed our bankers to forward you a remittance for 5 dollars to cover renewal.

"We would like to say how we appreciate receiving this publication which still appears to be the only journal published in any country dealing so fully with vitreous enamelling and developments in that field."

B. B. Kent, Director
B. B. Kent Limited
Ajax Works
London, England

---

an overseas member of PEI

Dear Mr. Chase:

"It was noticed in your Finish magazine that you operate a free controlled circulation to management, purchasing and key plant personnel in companies intimately connected with the domestic ceramic finishing industry.

"I am taking this opportunity to ask if this offer is open to manufacturing concerns such as ourselves who manufacture refrigerators and also do our own porcelain enamelling interior work.

"Should this offer be open to us, we would very much appreciate same. If not, we will be willing to subscribe to your magazine. We might add that we are members of the Porcelain Enamel Institute of America."

R. G. Hope, Ass't Manager
Charles Hope Limited
Brisbane, Australia

All FINISH circulation outside the United States is on the basis of five dollars ($5.00) per year in United States funds. As a congratulatory gesture in connection with your joining the Porcelain Enamel Institute, we are marking a subscription to FINISH for your company paid for the year 1949.

"ceramic coatings still of interest"

Dear Sir:

"I would appreciate receiving FINISH as ceramic coatings applied to steel will still be of vital interest to me."

Allen C. Francisco
Aeronautical Research Scientist
Lewis Flight Propulsion Laboratory
Cleveland Airport, Ohio

"excellent articles on Lustron"

Gentlemen:

"Thank you very much for the October issue of Finish.

"I have been very much interested in the excellent collection of articles on the Lustron operations. They are certainly presented very effectively, and I am sure you have had many compliments not only from Lustron but from many persons in the field."

H. B. Taylor
Pigment Division
The Eagle-Picher Sales Co.
Chicago, Illinois

"interested in section on Lustron"

Dear Sirs:

"In connection with our case research for the course "Government and Business" given here by Professor Lincoln Gordon, we are very much interested in the section on the Lustron Home included in your October issue of FINISH.

"We would be most grateful if you would send us two copies of this issue, and if there is any charge of this we will remit in due course."

S. Leonard Kent, Assistant
to Professor Lincoln Gordon
Graduate School of Business
Administration
Harvard University
Boston, Massachusetts

"very useful information"

Gentlemen:

"It gives me pleasure to add that the article on 1300° F. enamels published in your November issue of Finish was of great interest to me, and I hope in the near future you publish more articles on it. Also, I want to add that articles presented in Finish during 1948 have contained very useful information by which the Enamel Industry of tomorrow will be benefited by. As a student I have always found Finish of help to me in my classroom problems."

Madan M. Kapur
Alfred, New York

"the outstanding trade magazine"

Dear Sirs:

"During the past two months I have not been receiving my copies of FINISH.

"Please replace me on your mailing list, as I enjoy reading FINISH, and think it is the outstanding trade magazine."

F. W. Nelson, Management Engineer
Ceramic Research and Development
A. O. Smith Corporation
Milwaukee 1, Wisconsin

Comments from readers

Republic Steel Corp., Cleveland, Ohio

(Steel)

"I enjoy reviewing each issue of Finish."

Chester W. Ruth, Director of Advertising

Acme Porcelain Enameling Co., Bronx, New York

(Jobbing shop)

"I have enjoyed receiving Finish and have found it to give a lot of pointers that help a lot. I have been a porcelain enameler for the last 24 years, but am glad to say I sometimes find new things that I never thought of through your book and they all help."

John Williamson, Night Foreman

North Carolina State College, Raleigh, N. C.

(Research)

"We thoroughly enjoy your publication and consider it to be one of the finest in its field."

W. W. Kriegel, Head, Ceramic Engineering Dept.

Perfection Stove Company, Cleveland, Ohio

(Stoves)

"Enjoy Finish a great deal. Plant men appreciate down to earth talk on operating problems plant layout, and human relation methods."

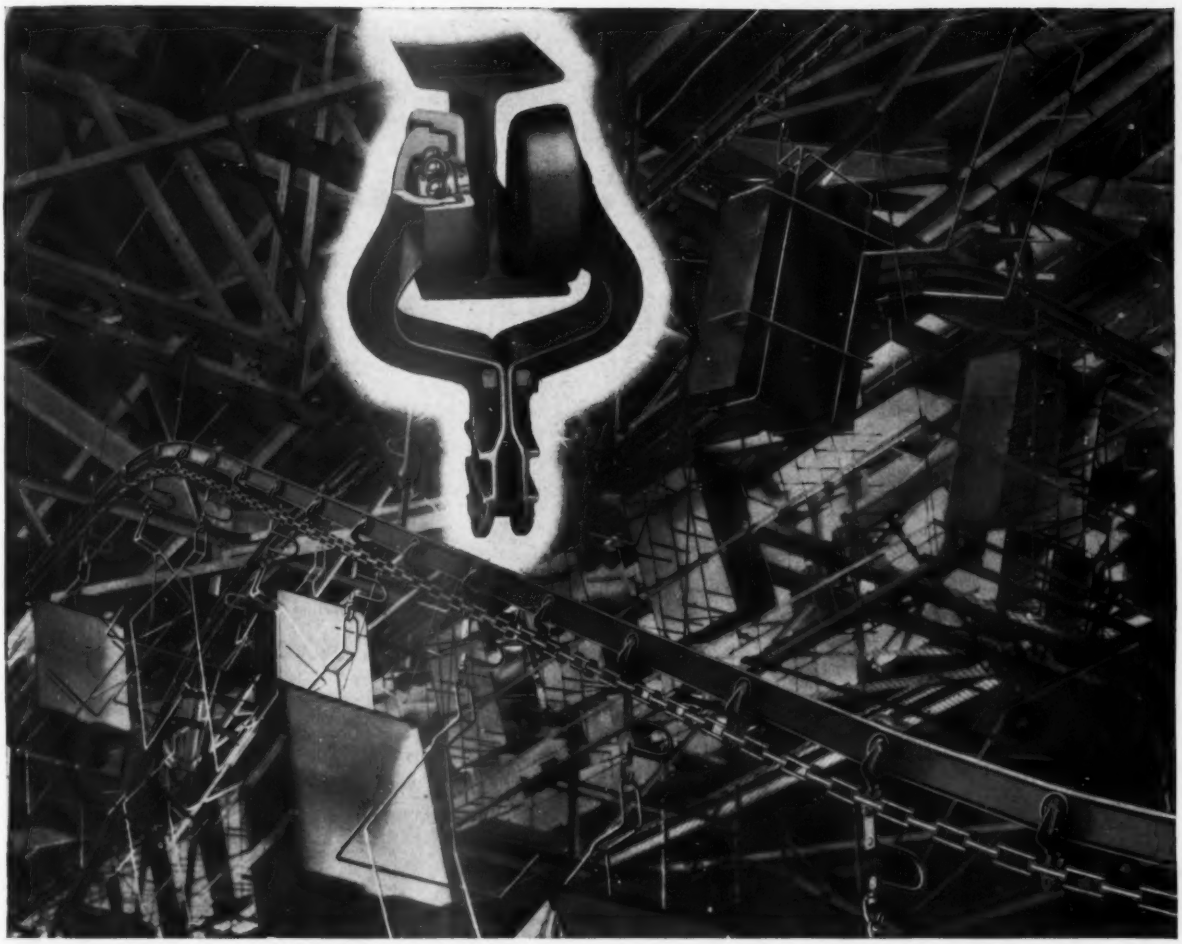
D. N. Gredys, Asst. Supt.

Lennox Furnace Co., Columbus, Ohio

(Heating equipment)

"Have been enjoying Finish greatly and look forward to receiving it."

Lewis Moore, Jr., General Manager of Foundries



How the *working* ceilings at International Harvester reduce handling costs with Link-Belt Overhead Conveyors

Storing bulky freezer units on the ceiling between production stages by means of Link-Belt Overhead Trolley Conveyors saves valuable floor space at International Harvester Co's. Evansville, Ind. plant. Because ceilings carry the load, aisles are never cluttered with parts on the move, nor is manpower wasted for transport purposes.

Bending up, down or sideways; to and from various production departments, Link-Belt Overhead Conveyors coordinate many different operations. This smoothly operating conveyor provides gentle handling which eliminates scratching up a finished surface, or other hazards that cause rejections. Operating cost is low, as Link-Belt Overhead Conveyors require only a modest amount of power. Maintenance is near zero, and wear is negligible.

Link-Belt Overhead Conveyors adapt easily to an infinite number of transport or assembly line operations. From the wide variety of Link-Belt chains, trolleys, rails, turn and drive equipment, it's relatively simple to install a conveying system to fit your special need—whether it calls for carrying light or heavy loads, on long or short runs, around turns, or up and down from floor to floor. Send for Book No. 2330.

TYPES OF LINK-BELT CONVEYING MACHINERY

Belt Conveyors	Oscillating Conveyors
Screw Conveyors	Apron Conveyors
Bulk-Flo Conveyors	Flight Conveyors
Chain Conveyors	Bucket Elevators
Trolley Conveyors	Bucket Carriers

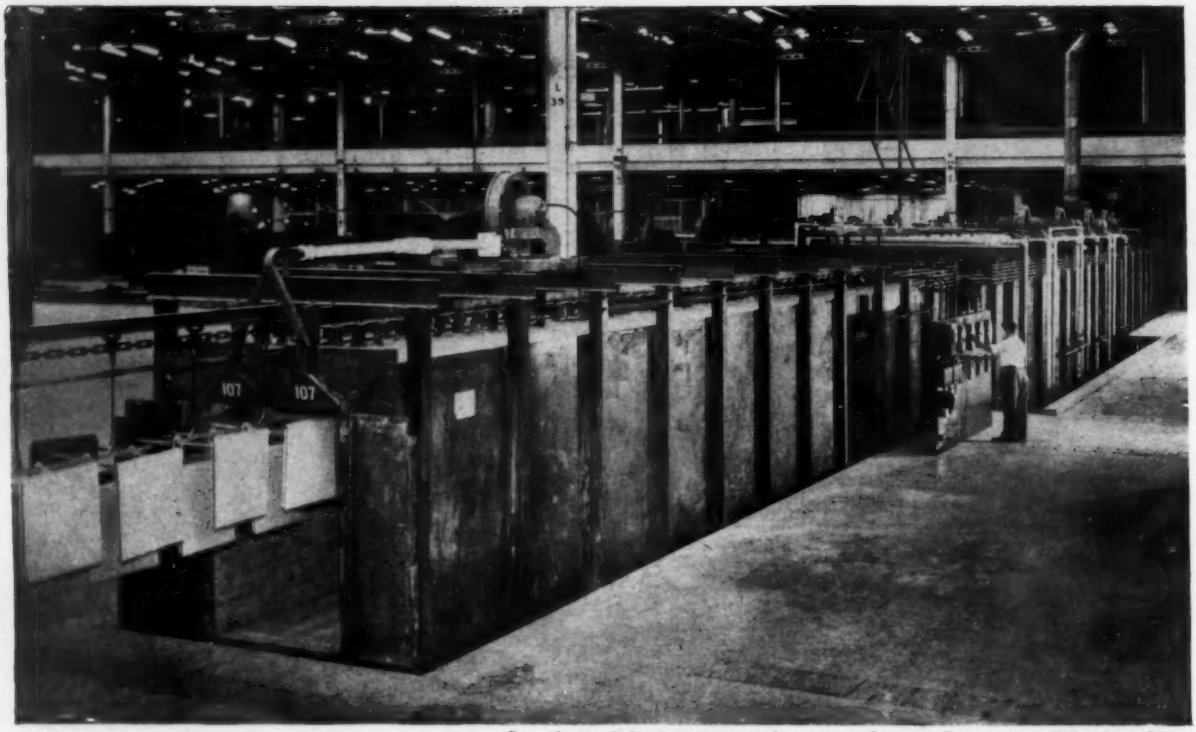
LINK-BELT COMPANY Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in Principal Cities.

11,349

LINK-BELT

CONVEYING MACHINERY

"THE COMPLETE LINE"



One of nine Boland continuous furnaces at Lustron Corporation, Columbus, Ohio.

This new BOLAND "Single Flow" Furnace is doing a nationally known job

The furnace shown above is the first of six Boland 180′ high sidewall combination oil and gas-fired continuous furnaces to get into production at the new Lustron plant in Columbus, Ohio. Each of the 180′ continuous furnaces at Lustron was designed to fire 19,000 lbs. of ware and tools per hour.

These six furnaces, plus two other 150′ and one 121′ Boland furnaces at Lustron, have the following features: STRAIGHT AWAY — SINGLE FLOW design; the FLOATING ROOF (Boland Patent 2,156,008); and strong, heavily insulated overall construction "built to last." Only a Boland-built furnace gives you all of these features.

The best selling point for any Boland furnace is the opinion of a user. Satisfied users are the one big reason for the increasing number of Boland-built furnaces.

ALBERT J. BOLAND COMPANY

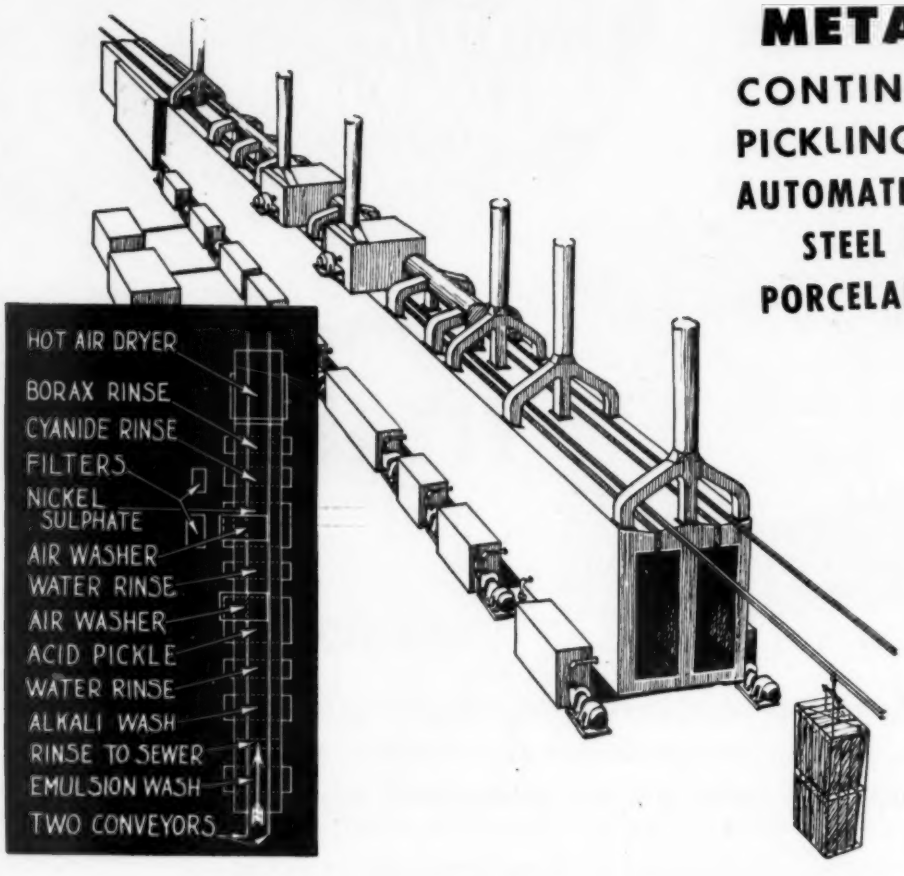
407 NORTH EIGHTH BUILDING • ST. LOUIS 1, MO.

Designers and Builders of Continuous and Box Type Enameling Furnaces

HOW TO PICKLE A HOUSE!

METALWASH

CONTINUOUS SPRAY PICKLING EQUIPMENT AUTOMATICALLY PREPARES STEEL HOUSES FOR PORCELAIN ENAMELING



Illustrated above is one of the mammoth METALWASH Continuous Spray Pickling Machines for processing steel panels and other parts, in the mass production of porcelain enameled steel houses at the Lustron Corporation plant, Columbus, Ohio. These machines, each over 180 feet in length, automatically continuous, prepare the various steel parts for porcelain enameling—taking them through the cleaning and pickling cycle as shown on the diagram.

This type of continuous spray pickling equipment provides a clean, nicely etched surface, properly nickel coated, producing greatly improved adherence qualities and better porcelain enameling. Fully automatic operation reduces handling, increases production and permits accurate control of time cycles and temperatures. The closed venting system eliminates obnoxious fumes and vapors.

METALWASH is a leader in the design and manufacture of continuous spray pickling equipment. If you have a metal cleaning or pickling problem, let METALWASH engineering and experience help you. Write for further information

METALWASH MACHINERY CORP.
149 - 155 SHAW AVENUE IRVINGTON 11, NEW JERSEY

These *Helpful* sales training booklets tell your sales story in the retail store

Tell salespersons what they should know about

PORCELAIN ENAMEL ON STEEL

in order to sell more of the products you make

● Today, retail salespeople are expected to know the "ins and outs" of the products they sell.

That's why "The Inside Story of Porcelain Enamel on Steel" and "The Inside Story of How Porcelain Enamel on Steel is Used" have been received so favorably by thousands of Sales Training Directors, Merchandise Managers, and Sales Personnel concerned with the retail distribution of household products.

Written in non-technical language, these helpful pocket-size booklets contain many fascinating facts about Porcelain Enamel on Steel. They provide the man and woman on the retail sales floor with the extra talking points that make it easier than ever for them to sell the products you make.

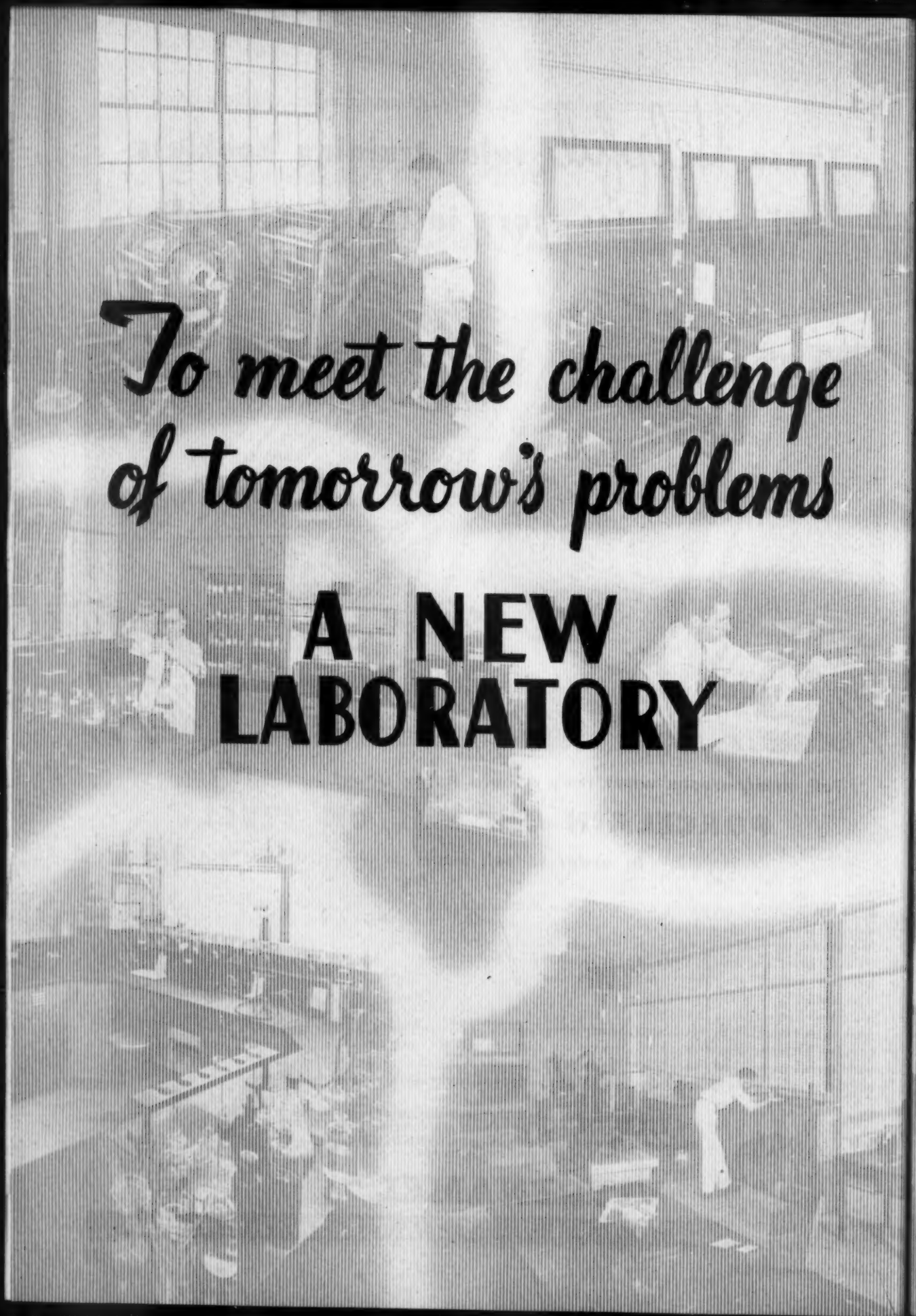
If you have not already seen these booklets and would like to look them over, we would be glad to send copies to you. Just write direct to United States Steel Subsidiaries, 2068 Carnegie Building, Pittsburgh 30, Pa.

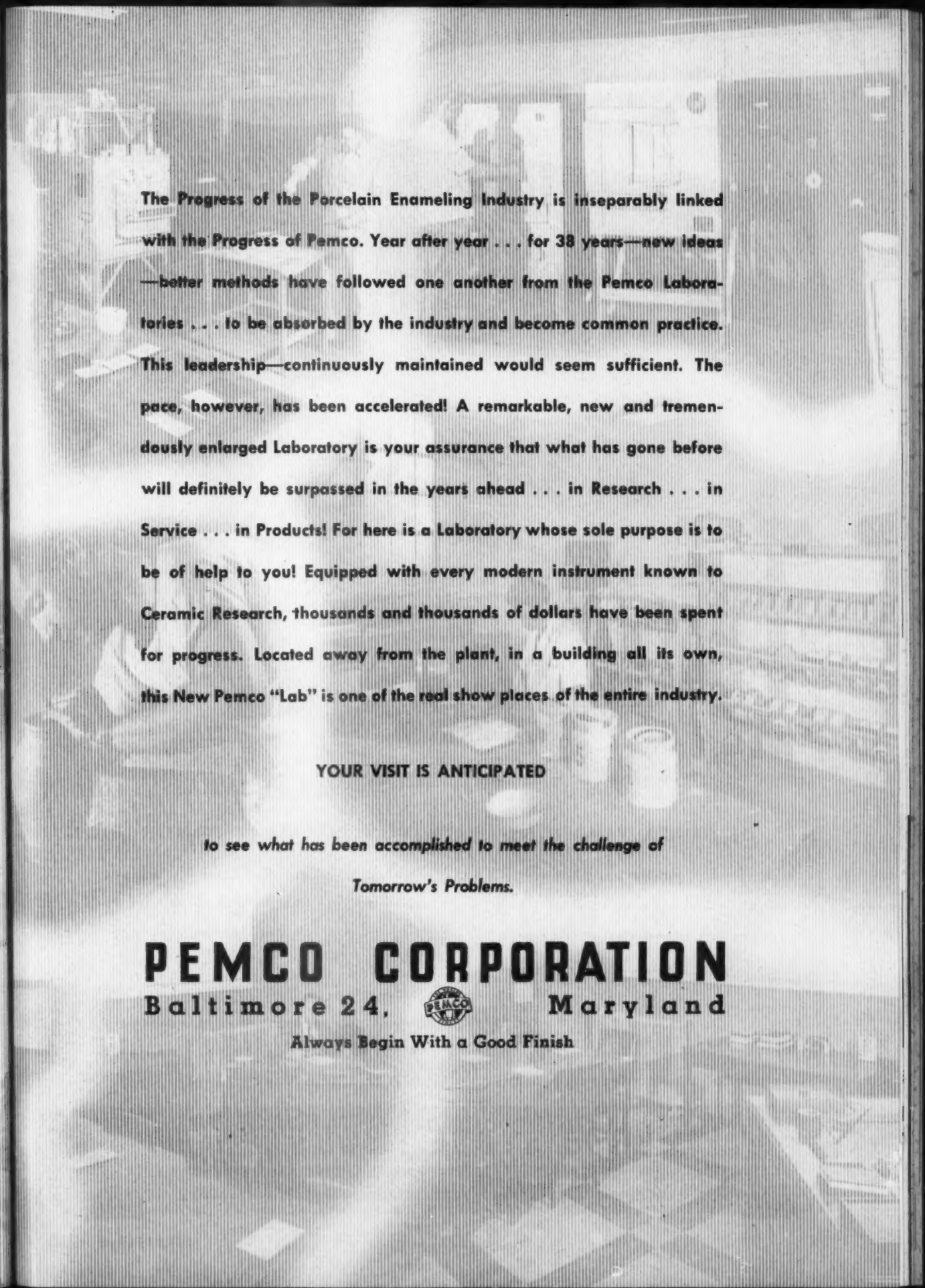
CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH AND CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

VITRENAMEL

UNITED STATES STEEL


To meet the challenge
of tomorrow's problems
A NEW
LABORATORY



The Progress of the Porcelain Enameling Industry is inseparably linked with the Progress of Pemco. Year after year . . . for 38 years—new ideas —better methods have followed one another from the Pemco Laboratories . . . to be absorbed by the industry and become common practice. This leadership—continuously maintained would seem sufficient. The pace, however, has been accelerated! A remarkable, new and tremendously enlarged Laboratory is your assurance that what has gone before will definitely be surpassed in the years ahead . . . in Research . . . in Service . . . in Products! For here is a Laboratory whose sole purpose is to be of help to you! Equipped with every modern instrument known to Ceramic Research, thousands and thousands of dollars have been spent for progress. Located away from the plant, in a building all its own, this New Pemco "Lab" is one of the real show places of the entire industry.

YOUR VISIT IS ANTICIPATED

to see what has been accomplished to meet the challenge of

Tomorrow's Problems.

PEMCO CORPORATION

Baltimore 24, Maryland

Always Begin With a Good Finish

LET US START PLANNING WITH YOU FOR 1949 PRODUCTION

If business continues to be as good as it was in 1948, you will need a reliable source for a big volume of enameling and stamping.

If business falls off, you will need new styling and probably some redesign for more economical production.

In either case, we have much to offer First, a thoroughly modern, well equipped stamping and enameling plant. Second, 28 years of design and production of high-quality porcelain enameled parts.

We have done good work during these years. We are dependent on our jobbing customers. We must have pleased them, or we should have been out of business.

VITREOUS STEEL PRODUCTS CO.

BOX 1791, CLEVELAND 5, OHIO *(Factory at Nappanee, Ind.)*

From month to month, year in year out, you may depend upon the quality and superior performance of McDanel Porcelain Products.

McDanel Mill Lining Brick are *extra fired* to lengthen the time between re-linings to keep your mill in profitable operation over greater periods of time.

McDanel Hand Rolled Grinding Balls are known throughout the industry for their fast, efficient grinding, their superior resistance to impact, their true economy.

McDanel Mill Head Assemblies contain features unobtainable in any other product to produce a uniform batch.

And so it goes through the entire list of McDanel Porcelain Products. Make them your partners in securing greater production, better performance, at less cost.

✓ *** HAND ROLLED GRINDING BALLS**

Made from specially developed vitreous porcelain body and hand rolled for faster, uniform grinding. Mill tested and individually inspected before shipment to you.

✓ *** MILL LINING BRICK**

Low in glass content, McDanel Mill Lining Brick gives maximum resistance to wear and long, satisfactory service. Complete size range to fit every size mill.

✓ *** MILL HEAD ASSEMBLIES**

Be sure to specify McDanel Mill Head Assemblies on your new mills. No metal can contaminate your mill charge with these patented covers. They are tops for uniformity of batch and long service.

✓ *** METAL COVERED GRINDING JARS AND MILLS**

Protected with heavy gage steel jacket McDanel Metal Covered Grinding Jars and Mills are easy to handle, easy to clean, discharge rapidly and stand up under long usage.

McDANEL Industrial PORCELAINS

McDANEL REFRACTORY PORCELAIN CO.
BEAVER FALLS, PENNA.

Chicago Vitreous Enamel Product Company
Exclusive Representative for the Enameling Industry

THE Finish Line

AS FINISH STARTS ITS SIXTH YEAR – we review a few lines from the pages of "The Finish Line" for 1948.

Cooperation is a great word – February, 1948

The Porcelain Enamel Institute took a big step forward in establishing a classification in its membership structure to provide for the "*captive*" plants. While porcelain enameling represents only one part of the activity of the modern appliance manufacturing plant, it is certain that there is a no more important section of the producer's plant. This relates to the salability of the product, the investment in plant equipment and the *opportunities* for improvement in processing techniques and saving in production costs.

New fields to conquer – April, 1948

It is expected that more and more steel will be used in architecture as it becomes available. Developments are under way for the more extensive use of steel for facing multi-story buildings.

There is this to remember — without a *definitely permanent finish*, ordinary steel would be useless for this purpose. Porcelain enamel presents the one permanent finish available for this purpose. Therefore, steel and porcelain enamel are logical partners in any advancement in the use of metal exteriors for our skyscrapers of the future. Stainless, of course, has its part in the picture — and, fortunately, stainless and porcelain enamel may be architecturally blended to enhance the effectiveness of both materials.

In this day of material shortages – July, 1948

It would seem to approach criminal negligence to fabricate a much-needed appliance or metal product, porcelain enamel it, assemble it, sell it and ship it, only to find that before the product reaches the ultimate consumer it is damaged beyond repair. The fact is that this situation has been true and, in some instances, is still true to an alarming extent. . . .

With this opening, *finish* plans to follow through with as many articles as possible, based on factual data. Our plan is to assist readers in the solution of their packaging and shipping problems to the extent that the publication of constructive information may be helpful.

It is our sincere hope that a year from now we will be in position to report a general improvement in the packaging and shipping situation, and a proportionate reduction in losses, both of which will mean dollars saved by shippers and carriers, and more products in the hands of satisfied consumers.

Finish had an idea – October, 1948

which, from all indications, may soon reach a stage of development that will earn the attention and active cooperation of all of the important producing groups in the major appliance and metal products industries.

The basic idea was that the very serious problem of "loss in shipment" on porcelain enameled products, which is currently costing manufacturers and carriers millions of dollars and the loss of valuable finished products, *could* be tackled effectively if the right program were developed and properly coordinated.

Ideas mean nothing unless they are effectively projected into activity. It was therefore suggested that the Porcelain Enamel Institute, as the logical national spokesman for *all* types of porcelain enameled products, form an expertly-manned committee to take over the job of coordinating information and developing a program that would utilize the best talent and information from all major producing groups as well as the carriers and the packaging industry. *(See Special Section on this subject starting on page 19 of this issue.)*

Here's a project which deserves the support and cooperation of every producer of a porcelain enameled product. It is a cooperative effort which will mean money in the pocket for every individual manufacturer and valuable savings for the carriers. It is in good hands, and we urge every interested manufacturer to lend encouragement to his association committee member (when names are announced), or to the PEI, in connection with this valuable work.

The refrigerator exterior – December, 1948

A circulation information form from a reader, received November 11, contained this comment: "*Keep up the missionary work for porcelain enamel refrigerator exteriors—I don't know a more effective medium than FINISH.*"

Regardless of the "effectiveness," you can bank on it that we *will* continue to harp on this and other subjects which we are convinced will benefit manufacturers and users alike.

Several factors will enter into the determination of the time element. First, time for design, tooling and, in some cases, new finishing facilities. Second, the speed with which we return to a competitive market, making quality and sales features of paramount importance for successful competitive selling. There is a valuable *existing* market *now* for porcelain enameled exteriors among present users. It will expand rapidly when the first porcelain enameled exteriors are on the market and forcefully presented through sales and advertising. We believe the top sales executives of the major refrigerator manufacturers *know* this. We will hope to be among the first to announce these new developments when they reach the announcement stage.

Dana Chase

EDITOR AND PUBLISHER

Sheets That DRAW DEEP ... with Minimum Breakage

There is an important reason why Inland Enameling Iron Sheets provide real deep-drawing performance—no matter how difficult the application may be. *They're tailor-made.* Inland metallurgists investigate thoroughly the fabricating problems involved—then process a sheet designed to the specific application and operation. Because of this procedure Inland sheets may be efficiently and economically fitted to the equipment in your plant and to existing methods of fabrication.

In addition, the use of Inland Enameling Iron Sheets produces better enameling results because of "double-tight" adherence, sag resistance, and correct chemical composition. We are striving to increase our production of these quality sheets in order to meet the unusual demand for them. INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

INLAND STEEL

INLAND *Enameling Iron Sheets*

OTHER PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP • TIN PLATE • PILING • FLOOR PLATE • RAILS • TRACK ACCESSORIES

SPECIAL SECTION

The National SAFE TRANSIT Program

designed to deliver the finished product safely from the assembly line to the final customer

Summary of plan of procedure

Foreword

The Packaging and Shipping Committee has been sponsored by the Porcelain Enamel Institute to pool the experiences and coordinate the efforts of the porcelain enameling industry with those of the carriers, the container manufacturers and other interested groups in a common endeavor to reduce the heavy losses that are occurring in the shipment of porcelain enameled products.

Damage in transit cannot be attributed to any single factor or agency, and a careful study and analysis of the over-all problem must inevitably lead to the conclusion that the manufacturers, the transportation agencies, and even the consumer, each bear a share of the responsibility of what happens.

The Packaging and Shipping Committee has summarized these responsibilities and has grouped them into specific projects which it will undertake in its effort to effect a joint solution of the problem.

If each party comprised within this undertaking will carry out its assigned task to eliminate, insofar as is possible, the transportation hazards for which it is alone responsible, the Committee has full confidence that this effort cannot fail and that a substantial reduction in damage to porcelain enameled products in shipment will follow quickly after application of the measures which it advocates.

R. F. Bisbee

Chairman, Packaging & Shipping Committee

THE following is an outline of the Industry Cooperative Plan for reducing shipping losses on finished appliances and allied metal products. It represents a Summary of Plan of Procedure as developed by the Packaging and Shipping Committee.

Premise — All manufacturing, engineering, and quality efforts are in vain if the product reaches its destination in a damaged condition.

Introduction — Reduction in damage in shipment requires cooperative effort between shippers and carriers. To make joint effort effective, each group cooperating must first know what the plan of action is and next what part of the plan it is to execute.

The attack of this problem has been resolved into three projects:

Project I. To be accomplished by manufacturers immediately.

Project II. To be accomplished by carriers immediately.

Project III. To be accomplished by cooperative effort of manufacturers and carriers in the future.

Project IV. To be accomplished by cooperative effort of manufacturers and carriers in the future.

finishfoto

Chairman Bisbee

In order to make this program effective, test specifications must be clear and understandable. Test procedures must be standardized between all certified laboratories and interpretation of results must be just and equitable in all cases. Once this is accomplished, shipping losses will be reduced and no manufacturer or carrier can afford not to support such a program.

Project I — for immediate execution

This problem has been approached by working out a plan with the carriers as represented by the Association of American Railroads, the Railway Express Agency, and the American Trucking Associations, and with the industry engaged in the manufacture and shipping of porcelain enameled products. This plan is one of prevention rather than cure of shipping damage by standardizing on shipping tests that will determine that the packaged product will stand transportation shocks before it is shipped. This approach is simple and logical.

The plan for the immediate execution of Project I follows:

1. Standardize on test equipment to conduct shipping tests on the packaged product.

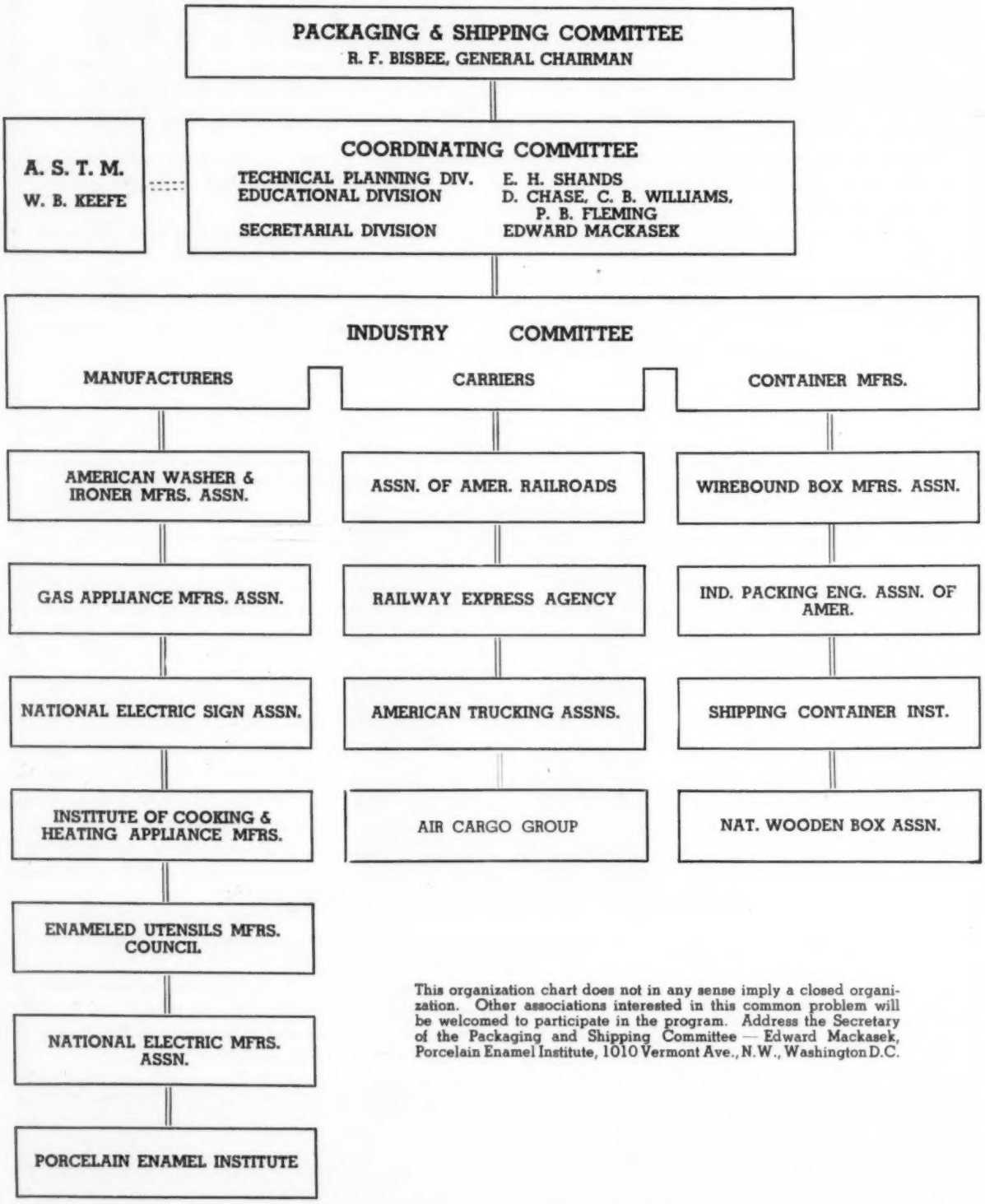
2. Standardize on procedure and specifications for conducting these tests.

3. Get approval by manufacturers and carriers on steps 1 and 2. This is highly important to the success of this committee.

4. Each manufacturer of porcelain enameled products shall install a set of approved test equipment or arrange for periodic tests to be made by an approved laboratory. This is necessary to give assurance that quality of packaging and of the product is being maintained.

5. Each manufacturer to test or have tested the packaged product on

ORGANIZATION CHART



This organization chart does not in any sense imply a closed organization. Other associations interested in this common problem will be welcomed to participate in the program. Address the Secretary of the Packaging and Shipping Committee — Edward Mackasek, Porcelain Enamel Institute, 1010 Vermont Ave., N.W., Washington D.C.

SAFE TRANSIT
FROM THE ASSEMBLY LINE TO THE FINAL CUSTOMER

→ *from Page 21*

the standardized test equipment according to the approved specifications. This will apply on all new designs and periodic production control.

6. Establish, if possible, laboratories that will be certified by both industry and carriers where the packaged product may be sent by any manufacturer to correlate his test results.

Project II — for immediate execution

The carriers have agreed to:

1. Parallel Packaging and Shipping Committee efforts outlined in Project I by improving their facilities wherever possible.

2. Institute an educational drive with all carrier employees who handle porcelain enameled products for more careful handling. This would include all types of transportation.

3. Furnish monthly reports to the Washington, D. C., office of the Porcelain Enamel Institute showing loss in damage, classifying these losses into commodity groups as much as is practicable.

Project III — for future execution

To work out between manufacturers and carriers a standardized placard which would be placed in or on each car loaded by the manufacturer. This placard would cover complete handling and loading instructions.

Project IV — for future execution

To institute joint research between industry and carriers leading to standardization of basic loading instructions including diagrams for loading major porcelain enameled products in cars and trucks.

Project I — test equipment and procedure

Foreword

Damage incurred in shipment of porcelain enamel products is becoming so heavy as to constitute an economic drag on the industry, the carriers, and the consumers. It is now a problem of prime magnitude that deserves the serious consideration of everyone concerned.

The situation demands cooperative attention rather than individual action. A number of manufacturers have achieved excellent results in reducing losses through a carefully prepared program. The transportation agencies, worried by the mounting losses of porcelain enamel products, are attempting to determine the underlying causes of such shipping failures, and container manufacturers are offering their services to meet the need. However, no one of these groups, by itself, can solve the problem. Acting together and contributing their individual experiences to a common endeavor, it is certain that considerable headway can be made in cutting down on these enormous losses of money and material.

To provide a means for the interchange of experiences between these groups and to coordinate the efforts of all industry segments that are interested in this problem has been the purpose of the Porcelain Enamel Institute in organizing the Packaging and Shipping Committee. The problem is not an insoluble one and, given the full cooperation of the groups that comprise it, the Committee feels that it can provide a satisfactory answer.

That this cooperation will be extended to the Committee seems assured if we judge by the enthusiasm that has been accorded to its efforts thus far. The carriers have given unqualified approval to the Committee's plan, and we trust that every manufacturer, after carefully studying the report of the Technical Planning Division of the Committee, will give his full endorsement to the project also.

It is the sincere hope of the Institute that the work of the Packaging and Shipping Committee will, through these measures, aid substantially in alleviating one of industry's worst headaches.

C. D. Clawson

President, Porcelain Enamel Institute

THE following is an outline of Project I of the "Safe Transit" Program as developed by the Technical Planning Division of the PEI Packaging and Shipping Committee.

(Project I covers packages of 100 lbs. and over — Project IA, now under study, will cover packages of less than 100 lbs.)

Approach to the problem

The intention of the Committee on Packaging and Shipping is to establish the least number of tests to which the packaged article must be subjected to give assurance that the product will not be damaged in transportation from the time it leaves the shippers assembly line until it reaches the final destination. Test specifications are established to cover:

1. Shocks in handling prior to transportation.

2. Shocks during transportation.

3. Shocks in handling subsequent to transportation.

The scientific approach to the reduction of damage in shipping the packaged article offers considerable cost reduction possibilities. Structural strength built into an article to overcome inadequate packaging is costly and unreliable. Packaging strength sufficient to protect an article with a structural weakness is also costly and

Leach Silo Unloaders, manufactured by the Leach Company of Oshkosh, Wisconsin are a boon to farmers in eliminating an unpleasant chore and conserving ensilage. But packing the 1200 pound, oddly shaped units in such a way that they could be handled and installed conveniently presented a difficult problem. Some method for shipping the machine as a group of sub-assemblies that would pass through small silo doors was essential.

Wirebounds solved the problem. Wirebound engineers "tailored" eleven different boxes and crates to package and protect the various parts of the unloader for safe, convenient shipping and handling. At the receiving end, re-assembly was easier because contents could be seen and identified through the sides of the Wirebounds for unpacking in proper sequence.

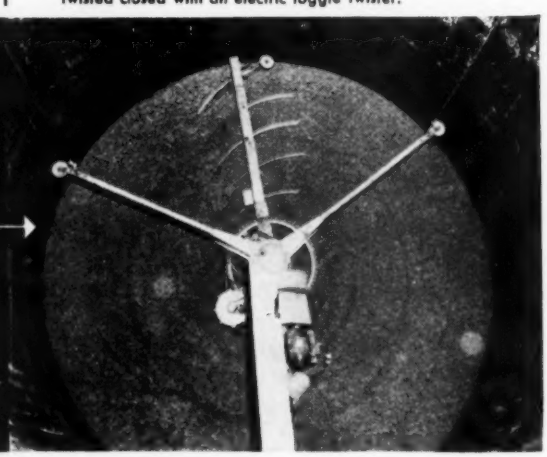
Light weight Wirebounds meant real shipping economy for Leach too. Less than seven man-minutes were required for packaging any one of the unloader sub-units and packed crates could be stacked 10 high to conserve valuable floor space!

Wirebounds can provide an efficient, economical solution to your shipping problems. Mail the coupon below!

161 pound motor for the Leach Silo Unloader is mounted on a crate base which is engaged by the bottom cleats of the Wirebound.

The door-like fourth side is folded shut and the wires are twisted closed with an electric toggle twister.

another "ODD SHAPE"
shipping problem solved by
WIREBOUNDS!



The unusual shipping problem encountered by the Leach Company is readily apparent in the above view of the assembled Silo Unloader.

▶ MAIL THIS COUPON TODAY

WIREBOUND BOX MFG. ASS'N.
Room 1832, Borland Building, Chicago, Illinois

☐ SEND COMPLETE LITERATURE ☐ SEND A SALES ENGINEER

NAME POSITION
FIRM NAME
ADDRESS
CITY ZONE STATE
PRODUCT

SIXTY WIREBOUND PLANTS THROUGHOUT THE UNITED STATES

Wirebound
BOXES & CRATES

Unpacking the 11 Wirebounds at the erection site is no problem since the twisted wire closures need only be cut to open.

undesirable. In both cases, damage in transit will likely be excessive. A change in the package, a change in the product, or a change in both made on the basis of test suggested by the committee will in many cases reduce the cost of the packaged product and at the same time reduce damage at the final destination.

finishfoto

Technical Chairman Shands

Test equipment and procedure

To start with, The Technical Planning Committee recommends the following equipment and testing procedure for articles suitable for testing by this equipment and under these specifications. Equipment and specifications will be worked out in the second step of this project to cover the smaller packaged products.

Shock recording instrument

The shock recorder known as the RS two way ride recorder No. 2W330 is recognized by the railroads as being the best instrument for measuring and recording longitudinal impacts and vertical vibration. The mechanism which measures the vertical accelerations is on the outside of the left end frame and the mechanism for recording the longitudinal impact is on the right hand side. The instrument now available is small and compact and records both the shock and vertical accelerations that the committee proposes.

Impact (longitudinal shock) test

This test determines the ability of the container, interior packaging, and the product to withstand shipment and if protection to the product during shipment is adequate.

Test equipment

This incline impact test equipment is set forth in Specification D880-46T issued by the American Society for Testing Materials, Philadelphia, Penn., and developed by the Freight Container Bureau of the Association of American Railroads. This impact test simulates the longitudinal shocks and impacts as received in actual shipment during various kinds of transportation. The longitudinal impacts terminate in a severe vertical shock both in actual shipment and in transportation tests.

The principal apparatus consists of a two-rail steel track inclined 10 degrees from the horizontal, a rolling carriage or dolly, and a rigid bumper. The bumper shall be a wood barrier constructed at the bottom of the incline, with the plane of the face perpendicular to the direction of movement of the carriage. The bumper shall be equipped with a removable crosswise nominal 4 by 4 inch timber used as an optional hazard that can be so placed as to contact the container at the time of impact at any desired position between top and bottom edges of the container. The track shall accommodate the flat bed rolling carriage or dolly which is equipped with steel wheels. The wood faces of the carriage and the bumper shall be maintained free of prominent projections which may affect the test results; such as, bolt or nail heads, scores, abrasions and splits. The apparatus may also have a cable and winch, or pulleys, to aid in bringing the dolly to the elevated end of the track and a tripping device for releasing the dolly from a predetermined point on the incline. The track shall be clean and the wheels well lubricated. The approximate cost to build this equipment will be $100.00.

PEI President Clawson

Test procedure

The container to be tested shall be placed on the dolly with the face or edge which is to receive the impact located projecting two inches beyond the forward end of the dolly. The dolly shall be brought to the predetermined position on the incline and released. The position shall be such as to produce impact into the 5th zone of the shock recorder. The shock recorder shall be positioned on the packaged product to receive the maximum shock setup during the impact test. The dolly and container

to Page 32 →

CLAIMS PAID BY RAILROADS ONLY

(First six months of 1948, compared with the first six months of 1947)

		1948	1947	% Increase
Plumbers' Goods,	Carloads	$323,487	$143,157	126.
	LCL	437,383	294,358	49.
		750,870	437,515	
Refrigerators,	Carloads	378,080	177,425	113.
	LCL	326,738	186,353	75.
		704,818	363,778	
Enamelware, Washing Machines, etc.,	Carloads	148,182	70,847	109.
	LCL	183,324	118,785	54.
		331,506	189,632	
Stoves, Ranges, etc.,	Carloads	545,042	264,575	106.
	LCL	852,297	559,163	52.
		1,397,339	823,738	
Total		$3,194,533	$1,814,663	75.

Read what they say about the Nationa

Hotpoint, Inc.

To Finish:

Concerning the recent meeting of the Packaging and Shipping Committee of the Porcelain Enamel Institute. . .

We know that freight claim prevention is a big "must" for both shipper and carrier alike, and in order to handle the job effectively, considerable teamwork and pulling together hard is required.

It is felt that the program outlined under Project I is a shipper step in the right direction towards eventual conquest of the freight claim problem, and corresponding efforts on the part of carriers should relegate "freight claims" to a level of unimportance.

It is our sincere wish that the objectives of the Packaging and Shipping Committee in this program be reached successfully.

J. G. Borson
Traffic Manager

Gas Appliance Manufacturers Association

To Finish:

Of course, the Headquarters management of GAMA heartily endorses this program, and it is evident from the letter *(to the membership)* that it is making every endeavor to obtain actual participation from 100% of its gas range manufacturer membership.

Harold Massey
Assistant Managing Director
(representing GAMA)

University of Illinois

To Finish:

It was a distinct pleasure for me to attend the PEI Packaging and Shipping Committee meeting held in Chicago, on October 28.

The enthusiastic reception given Project I by the members attending the meeting is a good indication of the great interest of the entire Porcelain Enameling Industry in the important work of this committee.

The Enameled Utensil Manufacturers' Council several months ago formed a Physical Distribution Committee which is studying the factors involved and the steps necessary in order to deliver acceptable, undamaged merchandise to the consumer. The Council's recognition of the problems by the formation of this committee and their appointment of a representative to the PEI committee certainly indicates they are solidly behind this program.

F. A. Petersen
Spec. Res. Professor
Ceramic Engineering
(representing EUMC and in charge of planning for Project 1-A — less than 100 pound packages)

The Maytag Company

To Finish:

That meeting of the Packaging and Shipping Committee having to do with Project I of the Porcelain Enamel Institute which was held at the Stevens Hotel in Chicago, October 28, 1948, was very constructive.

I think we're on the right track . . .

R. H. Thompson
General Traffic Manager
(representing AWIMA)

Association of American Railroads

To Finish:

Your editorial program should result in improving packaging and shipping of major appliances of porcelain enameled products.

A copy of Bulletin No. 101 is going forward to you, under separate wrapper. I am also including with the bulletin a copy of former Freight Container Bureau Bulletin No. 26, "Crates for Enameled Iron Sanitary Ware," and No. 27, "Handling Damages and Manufacturer's Defects in Enameled Iron Sanitary Ware. . . ."

If this Section can be of any assistance to you in your campaign, or if you desire copies of any of the publications, they will be supplied without cost.

A. H. Grothmann
Secretary

National Electric Sign Association

To Finish:

I am very enthusiastic over the possibilities of the pre-testing program as presented under the sponsorship of the PEI at the industry meeting held at the Stevens Hotel.

The Electric Sign industry is particularly interested in cooperating in any movement that would tend to reduce damage claims on electric sign shipments. You can count on our full support and cooperation in advancing this program.

Maurice Ely
Executive Secretary
(representing NESA)

Norris Stamping and Manufacturing Co.

To Committee:

J. C. Buchanan, our Manufacturing vice president, who attended the PEI meeting in Chicago has passed on to the writer the information obtained there relative to packaging and package testing on porcelain enameled articles. . .

We are seriously considering the purchase and installation of the testing equipment described at the meeting, and would appreciate any ad-

AFE TRANSIT Program

ditional information you might be able to furnish us on this matter.

Thanking you in advance and assuring you of our sincere effort to further reduction of damage in shipment of porcelain ware, I remain

E. E. Chamberlain
Supt. of Quality

Missouri-Kansas-Texas Lines

To Mr. Bisbee:

The October 1948 issue of Shipping Management indicates that you have been appointed as general chairman of the packaging and standardization program instituted by the Porcelain Enamel Institute in the interest of reducing freight loss and damage to enamel stoves and other commodities.

This is a subject in which this company is very deeply interested, *and if there is anything at all that we can do to assist you in any way, please do not hesitate to call upon us.*

H. H. Precht
Superintendent Stations
And Claim Prevention

Association of American Railroads

To Finish:

How do the railroads feel about the packaging-transportation program?

Good, very good.

At a meeting held in Buffalo, November 12, attended by about 200 railroad freight claim agents and loss and damage prevention officers, preshipment testing of the packaged product, as proposed by the PEI committee, was presented. I never saw a plan received more enthusiastically.

Based upon experience gained by several manufacturers already operating the plan, a very substantial improvement can be expected in conditions contributing to a claim loss to the railroads which this year probably will run between $7 and $8 million.

A. L. Green
Special Representative
(representing Railroads in the United States and Canada)

Railway Express Agency

To Committee:

A recent check made by our Traveling Loss and Damage Supervisor at _____, on the claim situation at _____, shows that *since the test was inaugurated, claims on top panels have dropped from 23.5% per thousand shipments, to less than 5% per thousand shipments,* which definitely shows they have located some of the weaknesses either in their packing, or they have materially eliminated the possibility of damage. It also bears out my contention that, through the educational campaign being conducted by Railway Express Agency, with all employees, in the handling of porcelain enamel, when plainly marked to indicate contents, is bearing fruit.

A. E. Dowling
(representing Railway Express)

Appliance Manufacturing Company

To Mr. Bisbee:

It is my understanding that your committee has developed a testing procedure for porcelain enameled products, which has been accepted by the Carriers Association and by your Institute. . .

Unless this procedure was developed for the confidential use of Institute members, we should appreciate receiving some information concerning it. Although our own particular problems in connection with packaging have not been serious, *we are naturally interested in any program designed to reduce the hazards of shipping and handling.*

V. E. Dunn
President

Newark Stove Company

To Finish:

We have used the Incline Impact Test and Vibration Test for seven years. Every piece of crated new merchandise is pre-tested.

As an example, if we were to build 15,000 heaters for stock, and then find by test that the crates were not properly designed or braced, we could have a loss on every heater. By pretesting, we preclude this possibility and, in addition, discover any product design failure.

This equipment, part of which can be built in any carpenter shop, has proved itself invaluable during the past seven years. One additional desirable result is that we do not "overbuild" our crates.

F. H. Guthrie
President

Wm. H. McGee & Co., Inc.

To Mr. Bisbee:

We have learned from an item in the New York Times of August 31st that you are chairman of the Committee sponsored by the Porcelain Enamel Institute, and that the Committee will endeavor to reduce losses on porcelain enamel products.

We are very much interested in this, due to the fact that we insure the export shipments of several manufacturers of these products, particularly ranges. We would, therefore, greatly appreciate being advised of the findings and test standards set up by your Committee.

The writer has personally worked with the manufacturers mentioned

above in an effort to establish certain specifications for export packing of these products, and in some instances we have been able to reduce the losses considerably.

We would be very happy to cooperate with you in every possible way, as any reduction in the losses would be to our mutual benefit.

P. H. Paulsen
Senior Engineer
Engineering Department

The Institute of Cooking and Heating Appliance Manufacturers

To Finish:

The Institute of Cooking and Heating Appliance Manufacturers is glad to endorse the cooperative plan for reducing shipping losses on porcelain enameled products. We have furnished each of our member companies with complete copies of the pamphlets prepared by the Packing and Shipping Committee of the Porcelain Enamel Institute — (a) Test Equipment and Procedures, and (b) Summary of Plan of Procedures.

Each member of the stove association has been urged to give this program thorough consideration, and we are hopeful that the majority of the industry will give it unqualified support on the assumption that the public carriers will make at least equal efforts with the manufacturers of equipment to reduce in-transit damage to porcelain enameled products.

Samuel Dunckel
Managing Director
(representing ICHAM)

Southern Railway System

To Finish:

Through a coincidence I have had an opportunity to read your very fine editorial in connection with damage in transit published in the July 1948 issue of your magazine.

Your editorial reflects a great deal of study and thought, and am certainly delighted to know that it will get into the hands of so many shippers, manufacturers, and railroad people, all of whom should appreciate the thoughts and indictments brought out in your rather provocative editorial.

If by chance you have a few of the July issues on hand containing this editorial, I should like to have 25, if available—invoice to be forwarded at the same time.

Luther A. Thomas
Ass't Vice President

The Tappan Stove Company

To Committee:

The standard tests (vibration and impact) have led us to a better crate design. Fortunately, the new crate which was designed to resist the standard tests turned out to be less expensive than the old one.

The new crate has proved itself by *almost entirely eliminating the breakage we used to get in carload shipments. A damage report on a carload now is indeed a rarity.*

(See article on next page by G. L. Dobson)

A workable program

for reducing shipping damage

By G. L. Dobson • CHIEF PRODUCTION ENGINEER, THE TAPPAN STOVE COMPANY, MANSFIELD, OHIO.

WHEN a housewife gets her new range, she expects that range to be perfect. She is not the least bit sympathetic with the fact that her range may have had a most grueling trip halfway across the country to get to her kitchen. She makes no allowances because it may have been shaken over the roadbeds and highways of the country with a violence capable of loosening nuts and bolts. The fact that her range may have been jolted and dropped by careless handlers who do not realize or care that porcelain enamel is a glass-like covering fused to metal does not interest her. No, she expects that range to be perfect. That is what she paid for, and she has a right to expect it.

The problem of getting that range to the housewife in perfect condition is one that affects our very existence as a manufacturer. Shipping and crating are non-productive elements of cost, but they have a more than proportional bearing on the quality of the delivered range. It is imperative for our future existence that we devote enough study to the problem of transporting our product from the factory to the consumer to insure her satisfaction.

One solution to the problem and one that we all resort to is that of placing claims against the carrier. Assuming that the claims are justified, the dealer orders repair parts and corrects the damage, and customer satisfaction is insured.

There are a lot of flaws in this type of solution: (1) we cannot be sure that the dealer will be capable or willing to do a satisfactory job of repair, (2) the dealer's good will toward us is jeopardized when he has to devote extra time, space, and perhaps tie up working capital with damaged merchandise, and (3) we pay for these repairs in the long run through the shipping rates. Claims against the carriers must be paid out of the proceeds from the shipping charges; if claims increase, we can expect the carriers to ask for a higher shipping rate. *(Carriers are now reporting an alarming increase in dollar volume of claims during the past year.)*

Editor's Note:

Mr. Dobson's article comes at a time for close comparison with the program outlined by the Packaging and Shipping Committee of the Porcelain Enamel Institute. While the article stresses the importance of "crating", it also points to the two suggested tests as a practical check on *both* product design and quality and crating design and quality.

The enthusiasm engendered by this testing program at Tappan should lend strong encouragement to other manufacturers who are considering the installation of the "Safe Transit" program.

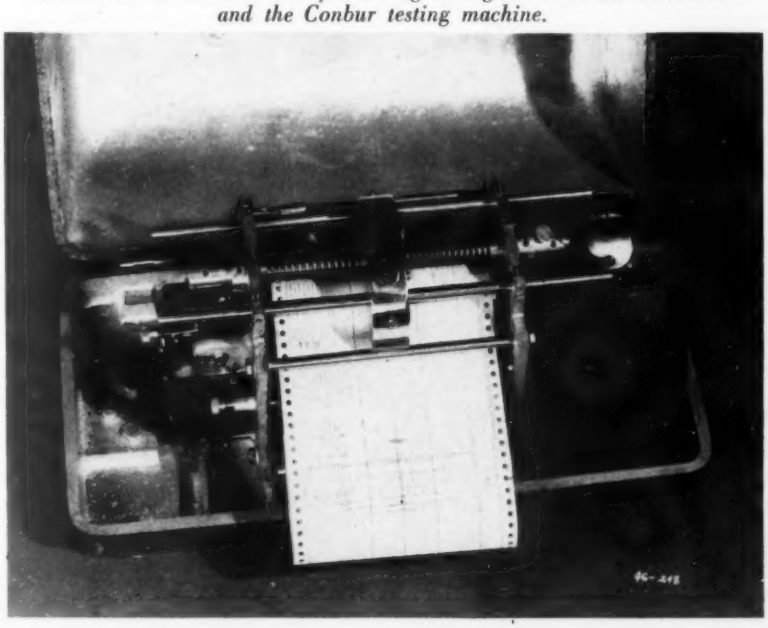
The "claims" solution to our problem will probably always be with us. However, it is obvious that if we could reduce the claims, we would benefit through lower shipping rates and improvement of dealer and customer relations.

Engineered crating a necessity

A more desirable solution to the problem of getting the range into the housewife's kitchen in perfect condition is better crating. Better crating does not necessarily mean more expensive crating. It means crating that will afford the product adequate protection against the hazards of transportation.

A crate design is frequently the evolution of a good many years of ex-

This instrument has been accepted by the PEI Packaging and Shipping Committee as the standard for testing lading on both the vibration and the Conbur testing machine.



A gas range being tested on the Conbur inclined impact tester in the plant of The Tappan Stove Company, Mansfield, Ohio.

perience. Changes are made from time to time as experience shows that improvement is needed. Considerable caution must be exercised when changes are made in either the crate or the product design to be sure that an outbreak of shipping damage does not occur. The old adage, "the proof of the pudding is in the eating" certainly applies here, but if the design is wrong, the "proof" is not likely to show up for several weeks, and with modern mass production a great deal of damage might already have been done.

The hazards of a bad design point out the need for means of testing crating changes before actual use.

Scientific pre-testing needed

For years we tested our crates by rolling them about on the shipping room floor, and when possible made trial shipments before actual production. Although our shipping damage had been comparatively low, we wanted to set up a better system of crate testing for the following reasons:

1. We wanted a consistent test. We had no assurance that the treatment on the shipping room floor was consistent. It varied with the elasticity of the floor and the vigor of the tester.

2. We wanted an adequate test. If we could not wait for a trial shipment, we had to be sure that our tests were the equivalent of transportation hazards.

3. We wanted a test that could be applied at regular intervals. We needed to know how the ranges would be when the dealers received them, and we needed to know it before they were shipped. We needed a check against any harmful variations that might be occurring in the crate or the product.

Search for adequate tests

In our search for adequate tests we checked with other manufacturers and found that no standard tests existed. Most of the manufacturers we contacted were as far away from adequate testing as we were. Others, however, were well on the way in the development of an adequate series of tests. Vibration was being employed to produce the shaking effect of road beds and highways. Controlled impact was being used to represent humping and handling shock.

Some manufacturers would enclose a two way ride recorder in actual shipments and obtain characteristic tapes showing the frequency and severity of transportation shock. They would then set up standards on their vibrator and impact tester which would closely duplicate the characteristic tapes. This system seemed to us to be one that *proved* its adequacy, so we adopted it.

Two tests established

Last winter we bought a vibration tester and built an inclined impact tester in accordance with specifications set up by the Freight Container Bureau of the Association of American Railroads.

The vibration test* consists of subjecting the crate to a one hour test vibrating at the speed required to give a severity of one "G" or a vertical force equal to gravity. This force will cause the crate to leave the platform momentarily. If a sheet of paper can be slipped under the crate while it is vibrating, it will show that it is leaving the platform as required.

To apply the impact test* the crated range is placed on a free running car mounted on a ten degree slope. It is drawn up the incline a predetermined distance, and released to hit a bumper wall at the bottom of the slope. The required distance is one sufficient to produce a fifth zone

*These tests are the same as those being recommended by the Packaging and Shipping Committee of the Porcelain Enamel Institute.

shock and is determined with a two way ride recorder. Five trips down the slope subject the crate to impact from various directions.

A successfully tested crate should be adequate to withstand transportation hazards.

As soon as the equipment was installed, tests were begun to develop better crate designs. In the course of the program, we solved many questions, and made some radical changes that would not have been possible without adequate crating tests.

In the middle of May a new crate design went into production. It was immediately successful and was well received by dealers. Damage reports from ranges shipped in carloads have practically gone to zero. Dealers express enthusiasm over such features of the new crate as: reduction of damage, ease of crate removal, and cleanliness of product.

We have not been as successful in our LCL and LTL shipments. Some of these shipments show evidence of very severe and careless handling. Further testing, however, has taught us to duplicate the conditions on our test equipment, and we are now making further changes which we believe will materially reduce the LCL and LTL damage.

Regular crating tests conducted by quality control department

Our quality control department conducts regular crating tests to guard against any discrepancies of material or workmanship which might affect the shipping quality of our crated range. We feel that this is a particularly important benefit arising from the standard testing equipment.

Major items of potential transportation damage are most likely to develop when a change is incorporated in the product or the crate. The testing equipment here performs an insurance function of pointing out these hazards before they leave the plant. Without it, several weeks production might be shipped before the difficulty was reported back. Such insurance is too valuable to be without. This feature alone was enough to sell our management on the merits of testing equipment.

Tests serve as check on product design and quality

The standard tests give us a chance to see the range as the dealer first sees it. Previously, we had never been able to get accurate reports on the condition of the range as it arrived at its destination. There undoubtedly were minor annoyances which the dealer never reported, but nevertheless were a strain on our dealer relations. Now we can catch these minor items in our own plant and report them to the department affected for correction. These items point the way to improved quality in our product, and over the years should help considerably in our relations with both the dealer and the housewife.

Standard crating tests have become a definite part in the solution of our problem of getting the range into the housewife's kitchen in perfect condition. We are enthusiastic over the program because of the following benefits we are getting:

1. Better crating has been developed through the tests.

2. "Trial shipments" made on our test equipment are insuring us against poor shipping design.

3. Regular pre-shipment testing is constantly pointing out ways of making our crate and range more resistant to transportation hazards.

Yes, the housewife has a right to expect her range to be perfect. And we are convinced that better packaged products resulting from standard crating tests can contribute largely to meeting her just demands.

Look to *finish* for more packaging articles.

Crated range is given vibration test to predetermine ability of packaged product to withstand transportation vibrational shocks.

Project I Safe Transit

→ *from Page 25*

shall then be drawn up the incline to the predetermined position and released. The position of the container on the dolly and the sequence in which the faces or edges are subjected to impacts may be at the option of the operator and will depend on the objective of the test.

This test shall be repeated so that each face of the container and the bottom is subjected to the impact. This shall constitute a complete standard impact test.

After the above test has been conducted, all porcelain enameled parts on the product shall be free from damage. Such appurtenances as handles, timers, etc., must be free from damage of any kind. The container must be in such condition as to afford reasonable protection to the product after the test.

Vibration (vertical shock) test

This covers the procedure to determine the ability of the packaged product to withstand vibrational shocks encountered during transportation.

Conditions simulated include:

Resonance
Flat Car Wheels
Rail Joints
Rough Road Bed
Car Side Sway

This predetermines the ability of the container, interior packing, and our product to withstand shipment, and if protection to our product during shipment is adequate.

Test equipment

The apparatus shall consist of a table of suitable size and weight-carrying capacity, supported on eccentrics or cranks which are driven by shafts so as to give the table a circular harmonic vibratory motion in a vertical plane.

The apparatus shall be capable of being operated at variable speeds to produce the various vibration frequencies experienced in transportation.

Side rails and a low fence may be provided so that the test object will not creep off the table during operation.

High fences shall be available so that the tests can be made with packages stacked high, simulating such stacking as may be encountered in transportation.

Test procedure

The packaged product shall be placed on the table of the vibration tester and fences attached to the test table suitable for the product being tested. The carriers recommend that the vibration frequency shall be such that the packaged product is forced to momentarily leave the table at some point during the vibration cycle, equivalent to acceleration of "1 g" for one hour duration.

After the above test has been conducted, all porcelain enameled parts on the product shall be free from damage. Such appurtenances as handles, timers, etc., must be free from damage of any kind. The container must be in such condition as to afford reasonable protection to the product after the test.

A message to manufacturers

By R. F. Bisbee • GENERAL CHAIRMAN, PEI PACKAGING AND SHIPPING COMMITTEE

NO program, no matter how elaborate, how well conceived or how well publicized, will have any meaning unless it is clearly and definitely demonstrated what it will do for you, the manufacturer. Let us consider the advantages or disadvantages of the SAFE TRANSIT program.

First, we envision the marked cost reduction in the packaged product through standardization of tests. On the basis of 15 years' experience we have found that the best efforts of the packaging engineer and the product design engineer are meaningless unless they are coordinated by a performance test of the packaged product, not the package or the product separately. Judging from our own experience — a company not without engineering talents — performance tests have often shown that in our initial designs the product was unnecessarily strong and the package insufficiently so, or that the reverse was true.

Cost reduction often possible

For example, it has often proved out that we have been able to remove a dollar from the product and add fifty cents to the package and produce a packaged product that would withstand the test where the more expensive combination failed. Or, conversely, it has often been true that removal of one dollar from the package and addition of fifty cents to the product has produced a satisfactory combination. So, we now conclude that it is a distinct probability that you will realize a substantial reduction in the cost of your product as it leaves the warehouse door.

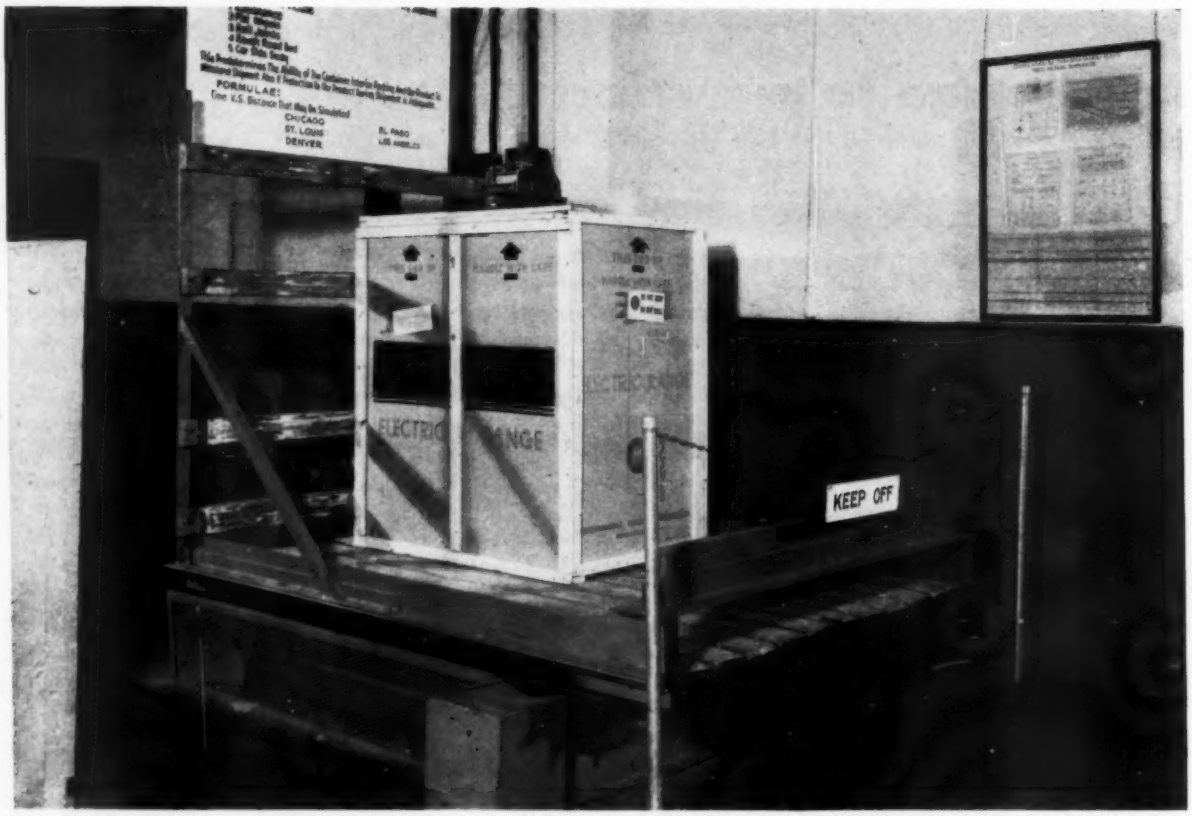
Each of you should realize that *this program in no way envisions an infringement of the rights of a manufacturer to design the packaged product as he sees fit.* Each individual concerned would merely submit his packaged product to a standard test and if his test produced a failure his own ingenuity would produce the solution.

While on the subject of standard tests, the meaning of the word "Standard" should be fully comprehended. These tests, as proved by experience, are adaptable to all types of products, and a different test for ranges, refrigerators and washing machines is *not* necessary. Standard performance is all that is required.

A customer good will builder

You will recognize, of course, the immediate cash-in-pocket benefits to be realized through reduction of shipping losses. In addition to claims *paid* — there is no way of accounting for the total of claims *not paid* which represent losses sustained by manufacturer and dealer. More important perhaps than the out-of-pocket loss is the intangible welding of what you all consider your most priceless asset — your good will and good name that you have carefully built over the years. This "Safe Transit" program falls under the heading of "SALES INSURANCE," designed to preserve the good will of the distributor and the dealer and, most important of all, your customers. *to Page 35* →

A demonstration of a package testing machine and a two-way ride recorder is being explained by Bisbee at a meeting with representatives of the carriers in the Westinghouse Electric Corp. plant, at Mansfield, Ohio. At this meeting the carriers endorsed the preventative program of the PEI Committee aimed at the reduction of shipping losses through pre-testing of packaged products to determine their ability to withstand shipping and handling shocks. Those in the picture are: Front row, left to right — Edward Mackasek, PEI; A. L. Green, Association of American Railroads; E. H. Shands, technical division chairman; Bisbee; A. E. Dowling, Railway Express Agency, and A. B. Batan, traffic expert. Second row — Charles Williams, of the committee; W. L. Yingling, American Trucking Association, and W. B. Keefe, packing engineer. At a later meeting (described in December finish*) representatives of principal industry associations approved the program.*



Package Tester in the plant of Westinghouse Electric Corporation, Mansfield, Ohio.

The L. A. B. PACKAGE TESTER
duplicates freight and motor truck damage

Some Users of L.A.B. Machine

American Stove Co., St. Louis
Andrew Jergens, Co., Cincinnati
Canadian Westinghouse Co., Ltd.
Coleman Co., Inc., Wichita
Crosley Corporation, Richmond
Estate Heatrola, Hamilton
Frigidaire Div., GMC, Dayton
General Electric Co., Erie
General Electric Co., Bloomfield
General Electric Co., Bridgeport
General Electric Co., Trenton
General Electric Co., Schenectady
International Harvester Co., Chicago
Gibson Refrigerator Co., Greenville
International Paper Co., Georgetown
Landers, Frary & Clark, New Britain
Lindemann & Haverson Co., Milwaukee
Murray Corporation, Scranton
Nashville Corporation, Nashville
Nat'l Cash Register Co., Dayton
Nineteen-Hundred Corp., St. Joseph
Norge Div., Borg Warner, Effingham
Owens Corning Fiberglass, Newark
Owens-Illinois Glass Co., Toledo
Philco Corporation, Philadelphia
Roberts & Mander Corp., Hatboro
Geo. D. Roper Corp., Rockford
Seeger Refrigerator Co., St. Paul
Sharp & Dohme, Inc., Philadelphia
Shellmar Products Corp., Mt. Vernon
State College of Washington, Pullman
Tappan Stove Co., Mansfield
Westinghouse Electric Corp., Mansfield
Westinghouse Electric Corp., Springfield
U. S. Air Forces, Wright Field
U. S. Navy, Hingham Field
U. S. Naval Air Mat. Center, Phila.
War Department, Fort Belvoir

The Package Tester duplicates freight car and motor truck damage by means of an accelerated test, which, in a relatively few minutes, determines the ability of a package to withstand the shocks encountered in transit. In short, it tests "shipability."

The vibration and shocks, movements, pitch and toss of freight cars and motor trucks are definitely duplicated by this equipment which was scientifically designed by engineers with years of experience in building vibration testing apparatus for industry and for the Armed Forces.

APPROVED BY THE TECHNICAL PLANNING DIVISION OF THE PORCELAIN ENAMEL INSTITUTE PACKAGING & SHIPPING COMMITTEE

Phone, write or wire for complete information and prices.

L. A. B. CORPORATION • SUMMIT, NEW JERSEY • U.S.A.

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If you do not have the red and blue books issued by the Packaging and Shipping Coordinating Committee, mail this coupon at once. ($1.00 per set from PEI, or free from your own association.) →

→ *from Page 33*

While all of you stand ready to replace merchandise which arrives in a damaged condition at the customer's door, nevertheless the sight of such damage does not enhance the customer's faith in your product and the time consumed in effecting repairs is certainly aggravating. If the shipment can be right the first time, if damage can be *prevented* rather than *cured*, your good will is preserved and enhanced.

While we recognize that porcelain enamel is the best finish at the present time for major home appliances, and is probably the strongest and toughest of all finishes available, we realize that it exhibits a serious shortcoming in that damaged parts cannot be repaired but must be replaced. *By barring unusual abuse, porcelain enamel is a lifetime finish*, and if the goods can be delivered in perfect condition we are certain that its wide acceptance will increase to even a greater extent. By adoption of this program you will show to the buying public that you are among the most progressive, ambitious and far-thinking in American enterprise—philosophy which will surely pay off in increased sales and lowered costs.

The investment required? A sum of $2,000* for the entire set-up — a sum that any organization can afford and one that will be repaid many fold within the first year of operation.

Now to consider the disadvantages. During the time this committee has been functioning I have honestly been searching for drawbacks in order to review the whole program in true prospective, and I can honestly say that I cannot find a single disadvantage. What can you possibly lose?

Gentlemen, we are counting on you; we are asking for your complete cooperation. May we have it?

***Total maximum cost of equipment if purchased. Part of equipment can be built to specification by any manufacturer.**

EDWARD MACKASEK, SECRETARIAL DIVISION
Packaging and Shipping Committee
Porcelain Enamel Institute, Inc.
1010 Vermont Avenue, N.W.
Washington 5, D. C.

Dear Sir: Please send complete outline of the "Safe Transit" program, including industry cooperative plan (red book) and Project 1, Test Equipment and Procedures (blue book). We are interested in studying this cooperative plan. ($1.00 enclosed)

Signed:_____

Title:_____

Company:_____

Street Address:_____

City and State:_____

Ted Fahrenwald and A. Rasmussen, both of Fahralloy Co., discuss business trends noticed during convention.

Shipp Davis, of The O. Hommel Co., and Jack Diehl, Jr., of Nashville Wire Products.

James Cline and P. R. Harrington, both of Majestic Mfg., with H. J. Simmons, General Steel Wares (Toronto).

Mr. and Mrs. Alden P. "Ike" Chester, of Globe American Corporation, at the convention banquet.

ICHAM

Mr. and Mrs. James Mitchell, of Grand Industries, Inc., at the convention banquet.

This group of stove men were snapped during a "bull session" just preceding the banquet.

FINISHFOTOS

W. C. Johnson and D. C. Verson, of Verson Allsteel Press; D. A. Edwards, Estate Heatrola; and J. A. Carlin, Verson.

Fred A. Tobitt, Armco Sales Division, and M. G. Klemme, of the Eagle Foundry Company.

Hart, Tenn. Enamel; Vaughn, Florence Stove; Padden, Merchandise Mart; Schneider, Florence Stove; Simons, Merchandise Mart.

Wildern, Detroit Brass; Clark Beverly, Peerless Stove; Earle Reynolds and Joe Gabry, both of Detroit Brass.

PHOTOS

F. H. Guthrie, of Newark Stove, and Leigh Whitelaw, of Gas Appliance Manufacturers Association.

Mrs. E. W. Pierson, W. A. Lean, of the Wilcolator Company, and Mrs. W. A. Lean.

FINISHFOTOS

FINISHFOTOS

Roger B. Stevens, William Johnson, Frank Henke, and Howard Goss, all of Harper-Wyman Company.

H. C. Morgan, Murray Corp.; E. W. Laudert, Cole-Sewell Engr.; A. C. Anderson and C. S. Anderson, of New Monarch.

Eagle

Ferro Enamel Corporation's booth in the exhibit hall of the Netherlands Plaza Hotel.

C. V. Price, of Quad Stove Mfg. Co., and William F. Cathcart, of Robertshaw-Fulton Controls Co.

Sixteenth annual meeting

of cooking and heating appliance manufacturers

A. B. Ritzenthaler is new institute president

MEMBERS of the industry press who were at the well-attended Institute of Cooking and Heating Appliance Manufacturers convention, held at the Netherland Plaza Hotel, Cincinnati, on December 6, 7 and 8, noted that the general consensus was for continued good business through 1949, though there would have to be more industry-wide emphasis on better marketing. Kenneth Kramer, executive editor of Business Week, and a guest speaker, summed up business prospects by stating that "a good volume of business at a level far higher than we ever hoped for in peacetime is still in prospect as we look ahead into 1949."

The convention opened Monday morning with a meeting of the Board of Trustees, with Sheldon Coleman, The Coleman Company, Inc., and Institute president, in charge.

Monday's program included a meeting of the Oil Division Technical Section, with Kenneth Jenson, Prentiss-Wabers Products Co., presiding; a luncheon meeting of the Kerosene Stove Division; a meeting of the Electric Range Division, with S. K. Harrington, A-B Stoves Division of Detroit-Michigan Stove Co., presiding; a meeting of the Export Committee, with E. A. Travis, National Enameling & Stamping Co., presiding; a meeting of the Marketing Committee, with Walter F. Muhlbach, Florence Stove Co., presiding; a meeting of the Oil Division Executive Committee, with John W. Baillie, American Gas Machine Co., presiding; and an informal meeting of Manufacturers of Sleeve-Type Oil Burning Appliances, with H. R. Singleton, Florence Stove Co., presiding. (A feature of the Electric Range Division meeting was a discussion of the current national "*safe transit*" program by Edward Mackasek, managing director of the Porcelain Enamel Institute.)

General session

Tuesday morning's general session, with President Coleman in charge, featured two leading speakers and a management forum. First on the program was the president's annual report to Institute members.

Kenneth Kramer, executive editor of Business Week, then spoke on "Business Prospects for 1949." This was followed by a talk, "Planning Selective Selling and Sales Control in our Changing Economy," by Luke J. McCarthy, vice president in charge of marketing, Hearst Magazines, Inc. Then came a management forum on the business prospects of a hypothetical stove company, with President Coleman in charge as moderator. Executives of the hypothetical firm were: Top Management Official, Alden P. Chester, president of Globe American Corporation; Financial Executive, Wendell C. Davis, president of Cribben and Sexton Company; Sales Manager, Cecil M. Dunn, general sales manager for Estate Heatrola Division of Noma Electric Corporation; Purchasing Agent, S. K. Harrington, vice president of A-B Stoves Division of Detroit-Michigan Stove Co.; and Factory Manager, H. J. Berman, executive vice president of A. J. Lindemann & Hoverson Co.

Tuesday afternoon meetings included Credit Managers, with Earl D. Weiland, Estate Heatrola Division of Noma Electric Corp., presiding; Financial Executives and Accountants, with A. F. Jacques, A. J. Lindemann & Hoverson Co., presiding; Factory Management and Labor Relations Officials, with J. B. Tudhope, Florence Stove Co., presiding, and J. Loren Freund, consultant, participating in the discussion; and Sales and Advertising Executives, with George E. Mumma, Sunray Stove Co., presiding.

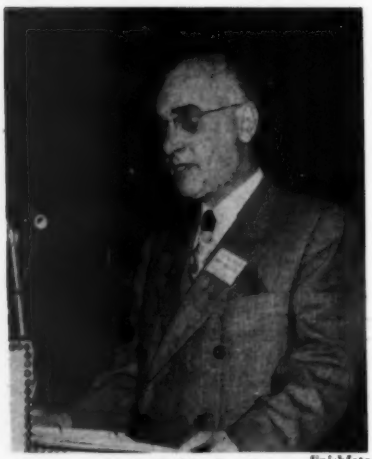
Tuesday evening was the highlight of social activity consisting of the president's reception and banquet. Music and entertainment for the banquet was furnished by Claude Thornhill, popular pianist, and his nation-

Claude Thornhill's singers entertain the stove men at annual banquet.

finishfoto

ally known orchestra and singers. Open house parties included those sponsored by The Merchandise Mart and the Robertshaw-Fulton Controls Company.

Wednesday morning the following Product Division meetings were held: Gas and Combination Range Division, with F. A. Kaiser, Detroit-Michigan Stove Co., in charge (R. F. Bisbee, of Westinghouse Electric Appliance Division, and general chairman of the Packaging and Shipping Committee of the Porcelain Enamel Institute, discussed the current "*safe transit*"



Luke J. McCarthy finishfoto

program at this meeting.); Gas Space Heater and Floor Furnace Division, with R. M. Liedstrand, Dearborn Stove Co., in charge; Oil Division, with John W. Baillie presiding; and Solid Fuels Division, with William H. Martin presiding. There also was a noon luncheon meeting of sponsors of the Coal Stove Research Program in cooperation with Bituminous Coal Research, Inc.

Seventy exhibitors

Seventy suppliers of materials, components, equipment and services used in the stove industry presented exhibits of the products for the benefit of stove industry members.

Business prospects for 1949

In his talk, "Business Prospects for 1949," Kenneth Kramer, executive editor of Business Week, sized up the current business situation quickly by pointing out that employment is at a peak, production is hitting high altitudes and sales are up, way up.

"On an overall basis," Kramer said, however, "it is fair to say now that the postwar boom based on shortages and accumulated demand is almost over. The character of the boom is changing as high level activity continues. The boom is being based more and more on full employment and high national income . . . there are many props under the boom."

The current boom

The props under the current boom were listed as "high farm income . . . high industrial wages . . . shipment of goods abroad under the ECA program . . . growing defense program.

"Those props are artificial to a considerable extent. They certainly cannot be classed as firm foundations for the economy. Yet there are other things which will help to keep the statistical trinity of employment, production and sales at high levels, if not at record levels.

"High consumer spending is the biggest and most important business support. . . . Another is construction . . . Public works haven't amounted to much since the end of the war. It looks like this field will open up some next year and help to keep the wheels in motion . . . Industrial construction may slide off some next year becase one company after another is concluding its postwar expansion program. But the prospect is that there won't be a big drop. . . .

New ICHAM Officers

President: A. B. Ritzenthaler, The Tappan Stove Company, Mansfield, Ohio.

Secretary-Treasurer: R. B. Hurt, Hardwick Stove Company, Inc., Cleveland, Tennessee.

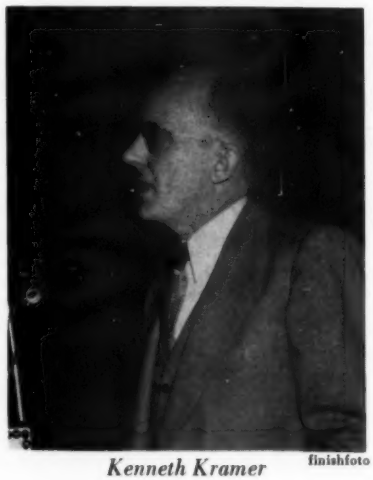
Executive Vice President: F. A. Kaiser, Detroit-Michigan Stove Company, Detroit, Michigan.

Vice President, Publications: Stanley E. Little, American Stove Company, Cleveland, Ohio.

Vice President, Memberships: Foskett Brown, Gray & Dudley Company, Nashville, Tennessee.

Vice President, Meetings: Walter F. Muhlbach, Florence Stove Company, Gardner, Massachusetts.

Kramer then pointed out a few things that were "wrong" with the picture. "One is the poor performance of department stores sales ever since the first of November . . . Wage and salary payments expanded faster than any other part of the economy in the 1948 third quarter. Personal



Kenneth Kramer finishfoto

income hit an annual rate of $193-billion. But less of it was spent. The rate of saving went up to $15-billion a year, the highest since the end of the war . . . While employment is still high on a national basis, it is falling off here and there . . . The increased cost of government in the year ahead demands an increase in revenues if further public debt and operating deficits are to be avoided . . . The President and his advisers are of the opinion that business can carry a bigger part of the load. So that means higher corporate taxes. An excess profits levy is a possibility . . . But if the effect on the big bulk of taxpayers is light or non-existent and national income remains high, the effect on the volume of business will be hard to see . . .

"Giving due allowance for the artificial and natural supports for this economy," continued the speaker, "production, employment and sales should not drop more than 10% and that is the maximum decline. It may be only 5%, and it may not even be that much . . . However, the new boom may be powerful enough to keep business up to its present level.

"A good volume of business at a level far higher than we ever hoped

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Lustron furnaces have "ware silhouettes", traveling thermocouples and "kinetic air plugs"

TWO unusual electric furnaces are part of a series of 11 furnaces in the Lustron Corporation plant at Columbus, Ohio. The other 9 are combination gas and oil fired. The two electric units are 180 feet in length with work chambers 11 feet high, and each is capable of handling a load of 29,000 pounds per hour (useful work and tools).

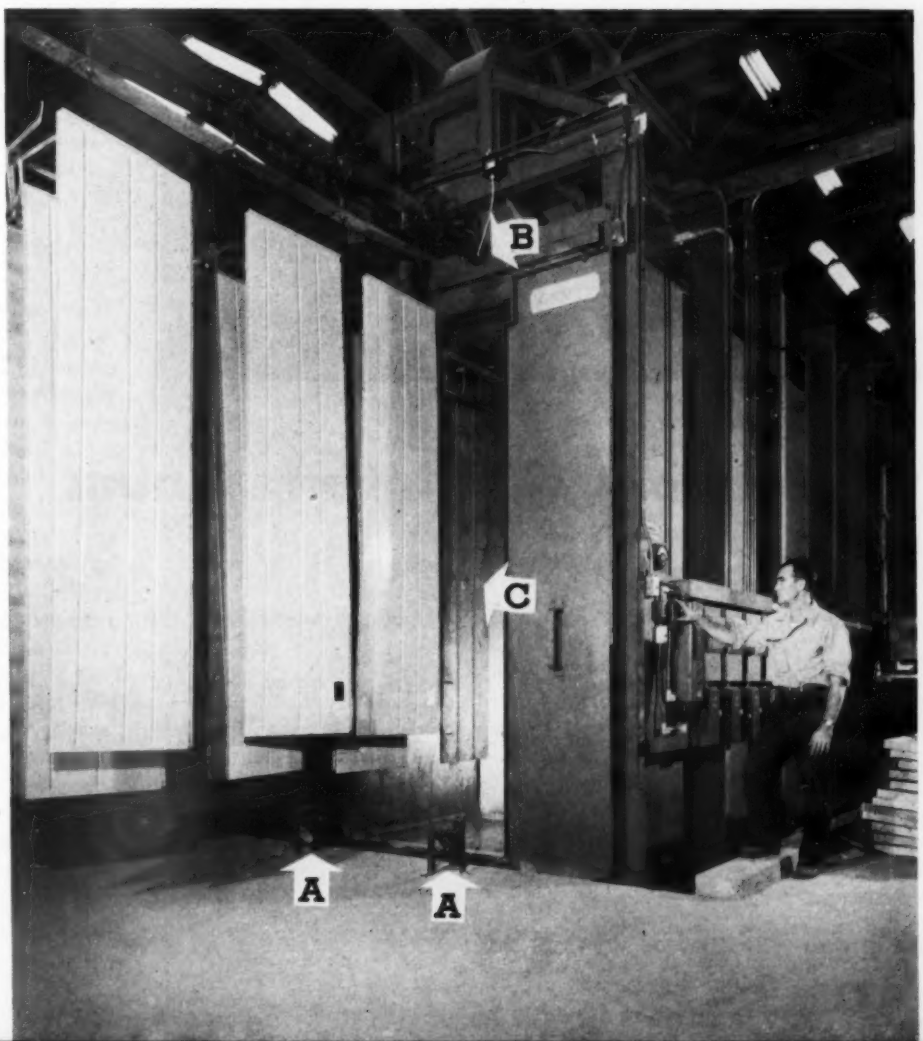
A feature of the electric continuous enameling furnaces is an electronic "ware silhouette." In combination with an electric eye arrangement at the furnace entrance, the "silhouette" prevents improperly hung porcelain enameled ware from entering by stopping the conveyor chain automatically, when a light beam is broken. This precautionary measure assures clearance between the piece part and the electric heating elements on the inside of the furnace, preventing damage to both.

Incorporated in the new furnaces is a traveling thermocouple arrangement. Traveling through the furnace chambers with the ware, the thermocouples measure ware temperature simultaneously at three horizontal levels. The temperature curves are electronically recorded on the illuminated charts of electronic direct-reading strip chart recorders.

In order to insure overall temperature uniformity, both furnaces have 32 separate zones of control. Each of the zones is governed by means of an indicating, controlling pyrometer with dual electronic circuits. The pyrometer operates through an automatic positioning type instrument to govern banks and zones of heating elements, insuring a proper and uniform temperature gradient.

Another interesting feature of the furnaces is a two-stage "kinetic air plug" located at both the entrance and exit ends. These "kinetic air plugs" are simply two vertical-moving, separate, recirculating streams of air which serve to prevent cross-draughts and to minimize convection heat losses.

Complete description of the fabricating and enameling facilities at Lustron appeared in a special section of the October, 1948, issue of *finish*. Special features of the plant and equipment will be presented as space is available.



Ware enters electric furnace where porcelain enamel is fused to eight-foot steel panels for the interior of Lustron Homes. Parts marked "A" are reflecting mirrors which are part of "ware silhouette" set-up —special feature of the furnace design. A light beam initiated at "B" is directed downward to mirrors and reflected to photo-electric eye at the top of furnace. The photo-electric eye is not visible in the picture. "C" is typical baffle plate which travels on furnace chain, carrying traveling thermocouples which continuously measure furnace temperatures.

Editor's Note:

Finish has followed this interesting development for four years, waiting patiently for the release of authentic information on the subject. It is with pleasure that we present this first comprehensive official release of technical data on vitreous enamels for aluminum.

The two modern stores shown on this and the following page represent early applications of vitreous enamel to aluminum for architectural purposes. These striking installations utilize products of The Kawneer Company, of Niles, Michigan, through whose courtesy these photos are presented.

Vitreous enamels for aluminum

By P. J. Carlisle, MANAGER, FIELD RESEARCH SECTION • *A. J. Deyrup,* RESEARCH SUPERVISOR AND *Dr. A. O. Short* • DIRECTOR OF CERAMICS RESEARCH, E. I. DU PONT DE NEMOURS & COMPANY

Exclusive feature finish

Up to this time there has been no vitreous enamel for aluminum in common use. Methods and compositions for such enameling were developed in the laboratory and recently have been successfully applied on a limited but growing commercial basis. The new materials have superior impact and flex resistance and excellent resistance to thermal shock. Thus enameled aluminum may be cut with a hacksaw and to a limited degree bent in the field. In general, the cover coat enamels are resistant to the action of mild acids and can be formulated to give a very wide range of colors.

Commercial application of this development was delayed by enamel-spalling due to the action of water or weather. Recent laboratory work resulted in an improved metal pretreatment which appears to have corrected the earlier deficiency, as judged by

an accelerated spalling test. However, time will be required to show the extent to which the accelerated spalling test can be relied upon to indicate satisfactory life of enameled articles under conditions of actual use.

Strict adherence to procedure

Strict adherence to the new pretreating procedure and to the spalling quality control test are considered essential to satisfactory results. At the present stage of our research, we can recommend enameling only of wrought 61-S alloy and *non-porous* castings of 43 alloy. It is hoped that additional research will lead to recommendations for the application of the enamels to other aluminum alloys as well as to commercially pure aluminum, 2S. Degree of temper of the metal appears to be no factor in enamel properties, although softer tempers are more generally suited to forming operations. The high lead content of the frits used necessitates care in handling to avoid industrial health hazards and also prevents application to surfaces which may come in contact with foods. *It is urged that the methods described herein be used initially, that any changes be made only gradually and then only after careful quality checks.*

Articles suitable for enameling

In general, any surface of articles made of 43 or 61-S alloy that can be easily reached with a spray gun can be enameled. In spraying hard-to-reach places, excessive slip usually results elsewhere with consequent enamel tearing. Corners and edges should be rounded to a radius of not less than 1/32". Thin, non-rigid sections must usually be enameled on both sides to prevent warpage. Appearance of the properly finished article will depend principally on good metal stock. Sand holes fill poorly and porosity often results in local spalling on castings. The metal stock should not be anodized nor previously treated by strong corrosion-inhibitive treatments or cleaners. Successful enameling has been done over welded seams joined with 1100° Airco welding rod.

In the case of cast articles of 43 alloy, it is *essential* that the castings be substantially free of porosity. Porosity in the metal, communicating with the surface, results in pinholes and minute spall marks in the enamel coating. Quality control in the foundry is necessary for preventing such defects.

Metal pretreatment

Experience shows that proper metal cleaning followed by this pretreatment gives a good bond, resistant to the action of water, between metal and ground coat because of the formation of a very thin film of closely adherent chemical products in the metal surface. A moderate amount of black dusty material also found on the surface does not appear to affect the bond adversely.

A clean, active surface free of grease, oil, and oxide is necessary to make the pretreatment fully effective. *The pretreating bath is not a cleaner.* Metal cleaning may be accomplished by 15-minute immersion in the following bath operated at room temperature:

¼% duPont's "Duponol" WA Flakes (or Dreft)
6% Sulfuric acid (0.5 lb. 66° Be acid per gallon)
93¾% Water

Following the acid bath cleaning,

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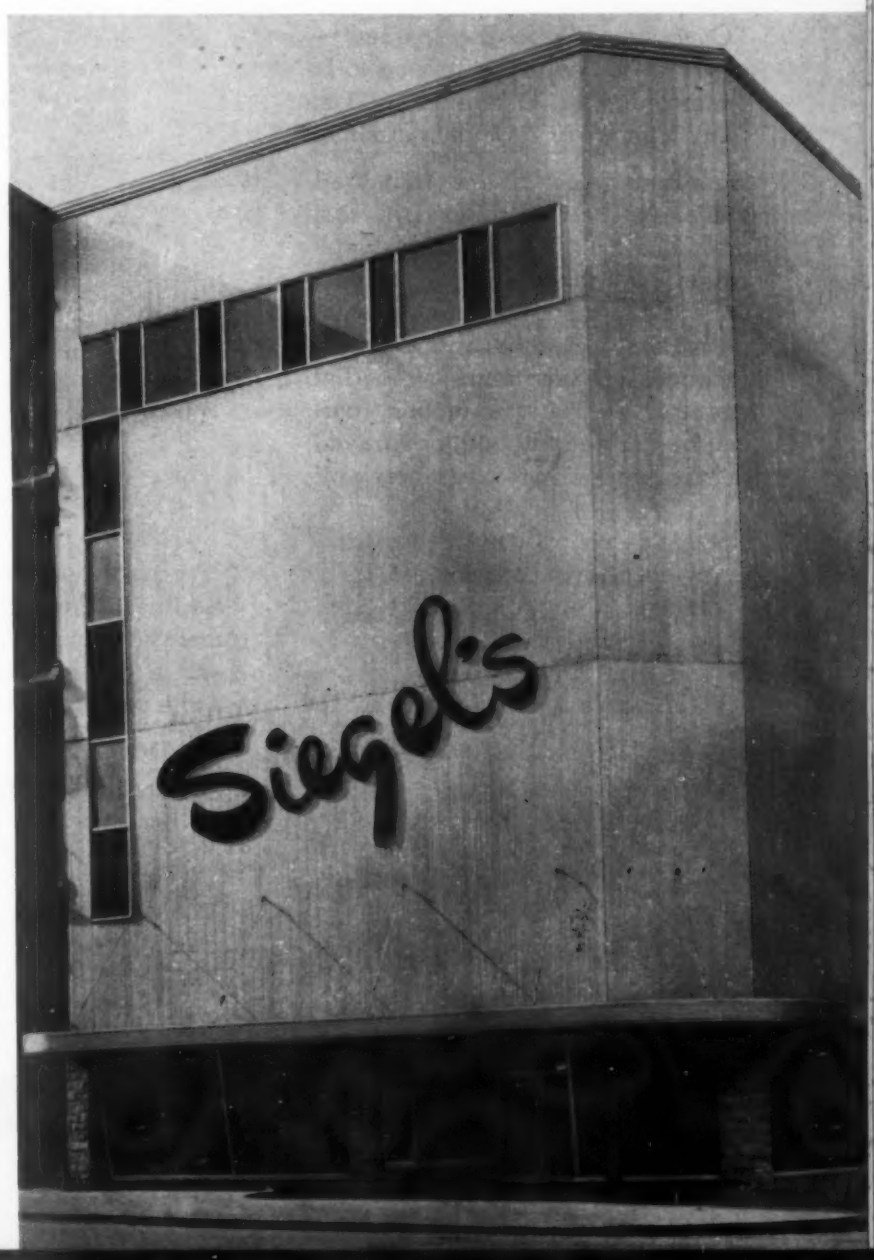

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WHERE IT'S NEEDED!

"Coverage Where It's Needed"—coverage all over the surface to be enameled with O. Hommel Company Tite Wite Porcelain Enamel.

Here are some of the added advantages—best typified by Hommel TITE-WITE: 15-20 gram application weights; 80-85% reflectance; a super white opaque enamel; permanent weather and acid resistance; exceptional bonding strength; lower production cost; can be drained, dipped, or sprayed; a finish superior to the finest antimony free super opaque cover coats applied at twice to three times the thickness; reduced black edging problem; practically eliminates shattering; better scratch resistance; improved thermal shock resistance.

If you have been having coverage troubles, then Hommel Tite-Wite, Hommel Powdered Clays, Hommel Oxides, and a Hommel Service Engineer, are the right combination for you to put to work.

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Permanent air markers—

an aid to pilots on non-scheduled flights

By Blanche Noyes • CHIEF OF AIR MARKING, CIVIL AERONAUTICS ADMINISTRATION, WASHINGTON, D. C.

Exclusive feature finish

Tom Brown was lost. He was off his course, and had been flying his plane over the hills of Pennsylvania for half an hour trying to find a landing strip or a familiar landmark to tell him where he was. He fearfully took his eyes from the ground and glanced at his gas gauges. The needle was flickering over the "E" that told him the fuel was dangerously low. He pulled his eyes away from those gauges — just in time to see an air marker pointing to an airport 4 miles away.

With a prayer that his gas would hold out, he made a bee line in the direction of that arrow.

Just where the arrow had indicated was the most beautiful sight Tom Brown had ever seen, a landing strip. Carefully — this was no time to overshoot the mark — he set his plane down for a perfect landing. Mopping the beads of perspiration from his face, he looked at his gas gauges. Both showed "empty." He silently thanked the installers of that air marker.

Tom Brown is not an individual. He is a composite of many private and non-scheduled flyers, who fly by visual navigational aids, rather than radio. They are mostly businessmen and flying farmers who do not want to go to the expense, and do not have the time to go into the intricacies of radio and instrument flying as transport and commercial pilots do.

More non-scheduled than scheduled flying hours

Today there are 426,182 private pilots in the United States. They need air markers to guide them just as motorists need highway signs. It is not generally known, but there is much more non-scheduled flying than scheduled. In 1947, private and non-scheduled aircraft flew 16,370,000 hours in the United States — more than 8 times the 1,932,000 revenue hours of domestic scheduled air lines. For this vast amount of flying, a minimum of 100,000 air markers are needed and many of them should be permanent.

An air marker, as many readers of *finish* know, is a sign placed on a roof, mountainside, highway, or similar site for the guidance of flyers. It contains the name of the town, the latitude and longitude in degrees and minutes, an arrow pointing true north, and a direction symbol pointing to the nearest good airport. The letters, figures, and symbols are chrome yellow on a black background.

There are less than 4000 air markers in this country. The majority of them are painted markers which are giving good service and great assistance to the private and non-scheduled flying public.

Six of the present markers are porcelain enamel. They are installed in Erie, Penn.; Wheaton, Ill.; Elyria, Ohio; Nappanee, Ind.; Portland, Maine; and Elma, Washington. The Elma marker is the most recently constructed, and was installed by CAA. The cost of this porcelain enamel, including freight, was $421; asphalt and felt $98.56; labor and supervision was $290.16 for 128 man hours, plus $40.50 per diem. There is no question but what the three men who installed the marker could do it in less than half the time now that they have experience. The day the marker was flight checked there was a very low ceiling and it was impossible to get

Blanche Noyes — has been traveling about the country encouraging civic and other groups, and flying clubs to aid in the construction of some 100,000 air markers needed in this country. She has been flying steadily since 1929. In that year she competed in the first women's air derby from California to Cleveland, Ohio. She was the first woman to win the Bendix Race from New York to Los Angeles. Going around the country she averages some 700 flying hours per year. With her late husband, Dewey L. Noyes, she was co-designer of a twin-motored plane used during World War II.

Aerial view of new porcelain enameled air marker at Elma, Washington.

above 3,000 feet; from this height the marker was legible from every angle and the gloss finish of the chrome yellow had a very superior attracting power.

I would like to see many permanent air markers in every state. They are particularly needed in inaccessible places where maintenance would require a great deal of time and be unusually costly, such as mountain sides, deserts, along ocean fronts and swamps where salt air and dampness are destructive. Of course the latitude, longitude, and true north of an air marker remain constant, thereby making a permanent marker practical.

Specifications for a permanent marker

Porcelain enamel is one of the best materials brought to my attention for a permanent marker. Being a mineral compound — a true glass — fused to metallic surfaces at high temperatures, it retains its original format and luster endlessly under all temperatures or corrosive conditions. The letters, figures, and characters may be made in one sheet or a series of segments or panels. They should be on 16 to 18 gauge enameling steel and be coated on all surfaces with a ground coat, in addition to the color coats on the face. There should be no punched fastener holes, but small holes not to exceed $\frac{5}{8}$" diameter may be punched to facilitate the fusing process. If segments are used they should be of the butt joint type, and flat without flanges or crimped edges. Enameling should be Type 1, Corrosion Resisting, in accordance with Army-Navy Aeronautical Spec. AN-E-da, dated November 19, 1945, titled "Army-Navy Aeronautical Specification, Enamel, Porcelain."

Panels or segments are easily packed and shipped, and can be readily assembled into the desired letters, figures, or symbols. They can be fastened to any type of roof, with a proper adherent, without damage to the surface. No piercing the roof is necessary. In case of re-roofing, the marker can be removed and replaced on the new surface.

Freedom from maintenance is important

Once installed, the porcelain enamel marker is permanent. It requires no maintenance. Near large cities and railroad centers where soot prevails, the markers can be quickly cleaned with soap and water. In many areas the rain alone is sufficient to keep the marker gleaming at all times. Even in desert regions, the winds tend to remove dust and sand, nor do such particles mar or scratch the hard surface of porcelain enamel.

Along ocean fronts and near swamps, porcelain enamel has proved that it resists the salt air and corrosion. There are porcelain enamel store fronts along the boardwalk in Atlantic City, N. J., that have withstood such atmospheric conditions for years and still retain their original usefulness and beauty.

Where air markers are placed on the ground, rather than on buildings, they should be elevated on metal supports which are raised to a height of at least three feet. This will prevent them from becoming obscured by grass, snow, tumbleweeds or sand.

On mountains, the elements may be so destructive and maintenance so difficult as to make a permanent marker a "must." Porcelain enamel, being impervious to such atmospheric conditions, could be used to great advantage. Mountain resorts could attract flying vacationists by the simple addition of an air marker.

When the pilot flies over a porcelain enamel marker, its high reflectivity makes it legible for long distances and from great heights. That this is a vital need is evidenced by the many pilots who have been guided to safety by air markers — and by the reports of many crashes because the pilot was "apparently lost."

Editor's Note:

There is certainly no one in better position than Blanche Noyes to present the air marker problem. Porcelain enamelers have the logical answer to the *permanent* marker — completely new marker.

Control of liquid and airborne wastes

from porcelain enameling

By Hubert S. Kline • INDUSTRIAL HYGIENE ENGINEER, FRIGIDAIRE DIVISION, GENERAL MOTORS CORPORATION, DAYTON, OHIO

SINCE the late war, and more especially since June 30, 1948, those manufacturers who have liquid wastes to dispose very definitely have a problem. Smoke ordinances exist in many large and small cities and the public enthusiasm against atmospheric contamination, both inside and outside of industrial establishments, is mounting rapidly. So today, only the inattentive or unwise members of management are failing to prepare their plants with the proper methods for controlling liquid and airborne wastes.

Public Law 845, signed by President Truman on June 30, is the keynote to action long awaited by state health departments and organized sportsman groups. In recent months many states assembled manufacturers, municipal officials, conservationists and the press, and effected agreement among these representatives toward control of industrial and domestic wastes. Notable among such efforts is the amendment of the Detroit City Ordinance wherein specific limitations are imposed upon industries seeking to discharge wastes into municipal sewers.

The Ohio River Valley Water Sanitation Compact was signed by the governors of eight states along this river the same day that the President signed Public Law 845, known as the Water Pollution Control Act. These eight neighboring states are bound by agreement to pass necessary legislation to effect mutual aid toward riddance of pollution from this great water course. Additional measures are well on the way.

Discharges to sewage treatment plants

Perhaps the most satisfactory method of disposal of trade wastes is to dump them into the local sewage treatment plant. This plan eliminates the costly operation of a waste disposal process and relieves management of responsibility for satisfactory compliance with state and local regulations on waste disposal. Before attempting to contact municipal authorities with such a proposal, sewage plant operation and some of the properties of exhausted or dirty plant solutions should be studied. The cyanide tank in the pickle layout may look small when compared to the vast digestion tank on the sewage plant property, but so was David when compared to Goliath! Cyanide solutions can easily kill bacteria and destroy or impair sewage digestion. In fact, bacteria are just as temperamental in their living as are some humans. When our systems become acid, we become sick and cease normal function in our digestive track. Gasification may result, and, in fact, this does result when excess acid gets in a sewage digestion tank. The pH of good digesting sludge is between 7.1 and 7.4. Trouble results when the media falls much below pH 7.0. Gradual release of waste acids can be acceptable to sewage plant operation, but it is well to notify the sewage plant superintendent when large quantities of such wastes must be dumped. Metal salts or nickle and copper greatly interfere with the sewage system, and acid with pH below 4 or 5 should be neutralized to save sewers from damage and to les-

To test effects of industrial wastes on stream life, fish cages are placed at sampling locations and checked periodically.

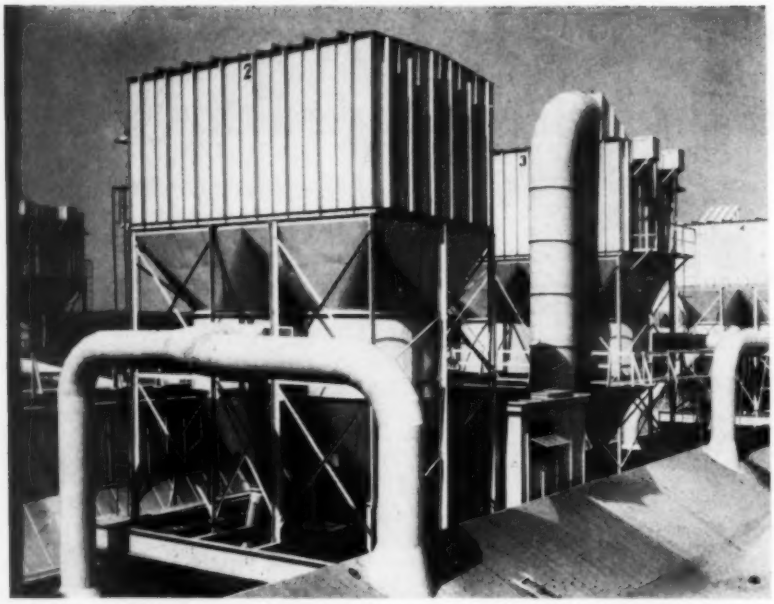

Photo shows dust collectors which are capable of handling 35,000 cubic feet of air per minute.

sen the blow upon the local sewage plant.

Discharge of wastes to rivers and lakes

Porcelain enameling wastes, consisting essentially of acids, alkalies, cyanides and metal salts, have three general effects upon stream like, namely: (1) cause death by direct toxic action, (2) cause death by indirect action such as oxygen depletion or destroying food supplies for fish, and (3) drive fish from the region of waste discharge by creating an undesirable environment. Ellis[1], Richer[2] and others have made valuable contributions to the literature on the tolerances of fish to industrial poisons. Fish prefer a stream having a pH range between 6.5 and 8.4, cyanide content below 0.1 part per million, and free of sludge banks and deposits. A pH range below or above 5.0 and 9.0 is definitely undesirable. Consider the fact that many stream beds are slowly being blanketed by sludge deposits which prevent growth of bottom plants upon which fish thrive.

Another, and more important phase of this disposal procedure, is the effect of such wastes upon water used for water supply and recreation, such as bathing. Fortunately, enameling works do not usually employ such chemicals as phenol, cresol and oils which create tastes and ordor difficulties in processing water for human consumption. However, acids cause corrosion of water treatment equipment and also damage river boats, steel piling, and the like. Cyanide is extremely undesirable in recreational waters.

Engineering approach to liquid wastes control

What once was a lost wilderness as far as research goes is now a fertile field of information, ready for easy assimilation by plant engineers and designers. Just a few years ago, industrial groups were begging state and local sanitary engineering departments for recommendations on how to approach waste treatment problems, what standards were available, and how to chemically analyze waste solutions in dilute amounts. A well known sports leader once challenged a meeting of state and industrial representatives with the opinion that ways and means of solving industrial waste treatment problems could be effected once industry puts its mind to it. Organized research projects are buzzing along on many meaty problems such as treatment of pickle liquors, metal plating wastes, oil and petroleum residues, and hosts of others. Federal and state agencies can now be of ready assistance to manufacturers.

Preliminary investigation

Early in plant investigation the manager or process engineers should determine (1) if solutions can be reclaimed or conserved to lessen the waste disposal problem, (2) if there is a nearby sewage plant into which wastes can be discharged with little or no pretreatment, and (3) if other neighboring industries can pool their wastes in a common plant for mutual treatment on a share-the-cost basis. In many cases, considerable time and money for preparing new solutions can be saved by filtering, settling suspended matter and using the solution an extra week or two before dumping. Neighboring plants may have such waste products as lime, limestone or carbide sludge which can be used for neutralizing pickle acids.

After taking a quick look at the problem, then more definite information is needed, such as: (1) complete inventory of waste solutions including quantities of each, (2) survey of utilities to determine sewer connections, sewer flows at various periods and sewer destinations, (3) flow of river or other receiving body of water in order to effect satisfactory dilution, (4) chemical nature of waste flow including pH, acidity or alkalinity, settleable solids, suspended solids, cyanide content, metal salts, etc., (5) consult health and municipal authorities to determine degree of treatment needed to protect stream life, public drinking water supply, sewer construction, or sewage plant operation, and (5) possibility of concentrating wastes by segregation from rinse waters if treatment is necessary.

Methods for treating pickle wastes

Since pickle acids and cyanide neutralizing solutions are of general interest and considered most detrimental to streams and sewage plants, these alone will be treated in this paper. A number of tested procedures are mentioned and additional details may be obtained from trade literature.

Two recognized programs are suggested: (1) controlled dilution, and (2) chemical treatment. The first

involves careful calculation of discharge rates and dilution rates of additional flowing clear waters such as the receiving stream or total sewer flow into the sewage plant. A complete knowledge of health department requirements is necessary to avoid overloading the receiving body. Holding tanks are designed to receive wastes prior to admission to sewers, greatly facilitate removal from the plant and reduce losses in production time. These same reservoirs or additional sump tanks can serve to trap leakage from damaged tanks. Discharge from the holding tank can usually be extended to last several days.

Pickle acids can be neutralized by several methods, such as: (1) utilize alkaline cleaner solutions as far as possible, (2) addition of lime slurry to raise pH to about 6, (3) addition of pulverized 200 mesh limestone and aeration to settle iron salts, (4) discharge the acid waste onto beds of coarse limestone, and (5) controlled dilution by slow discharge to receiving stream where natural alkalinity of water can neutralize the acid. The first three procedures result in suspended solids which quite often are difficult to settle because of ferrous sulfate content. Step 4 is difficult on account of coatings on the crushed limestone. Procedure 5 requires time if waste is discharged direct to stream. In this case a holding tank is recommended.

Cyanide solution can be treated in a number of ways, such as: (1) decomposition by chlorination, (2) by ion-exchange aeration methods, (3) addition of ferrous sulfate to form ferrocyanides, (4) treatment with lime-sulfur, (5) addition of acid in a well ventilated tank having forced draft through a tall stack, and (6) very slow discharge to sewer allowing for absorption, dilution and gradual decomposition of the waste. The first and second procedures are relatively new and appear to be worth considering. Steps 3 and 4 are used frequently and are satisfactory, especially the use of ferrous sulfate. Care is needed to insure that only neutral, acid-free salts are added. Process 5 is quite old and may cause atmosphere complaints in nearby communities or homes. The dilution technique is workable only if adequate dilution water is available, and is not recommended if first class streams or lakes receive the flow of waste. A great wealth of material is now available to help plant representatives who must treat and/or control liquid waste discharges.

Control of airborne wastes

Only liquid wastes, which may be defined as solutions undesired and requiring discharge, have been considered up to this point. On the other hand, airborne wastes may be losses of valuable materials, as well as obnoxious vapors and gases which escape into the air inside the plant, or are transported outside of the plant by exhaust systems. The first classification of such losses, namely, those airborne inside of the plant, is the problem for the industrial hygiene engineer. When such airborne materials are transported from the plant through exhaust systems in large amounts, they become a problem for the plant engineer, process department, or the chemical laboratory.

Problem inside the plant

Porcelain enameling processes create airborne wastes which can be considered detrimental to the working environment inside of the plant. These wastes may be dusts, mists or vapors, and gases. Industrial hygiene may be defined as the combined effort of engineering, chemistry, physics and medical sciences to maintain the working environment free of harmful substances capable of causing occupational diseases. As mentioned before, the average human can withstand the toxic effects of many known poisons for varying lengths of time without injury. Accordingly, many states and agencies of the federal government have established limits of exposure for a large number of airborne substances found in most industries. These are recorded as maximum allowable concentrations (MAC) of chemicals permitted for safe inhalation or exposure during an eight-hour working day. An average list of some MAC limits for the enameling industry is shown in the accompanying chart.

Maximum Allowable Concentrations for Enameling Industry

Substance	*ppm*	*mg/m³*	*mppcf*
Benzene (benzol)	100		
Benzine (naphtha, Stoddard solvent)	1000		
Carbon monoxide	100		
Carbon tetrachloride	100		
Chlorine	1		
Chromic acid		0.1	
Fluoride dusts, smokes		1.0	
Hydrochloric acid	10		
Hydrogen cyanide	20		
Hydrogen fluoride	3		
Nuisance dusts			50
Silica (quartz, free silica)			5
Sulfuric acid		5	

Note: ppm, or parts per million parts of air
mg/m³, or milligrams per cubic meter of air
mppcf, or millions of particles per cubic foot of air

With a knowledge of the MAC limits, the industrial hygiene engineer is in a position to evaluate the hazards of the working environment and to recommend a satisfactory solution. We should keep in mind that it is very often necessary to spend money to save money. Workers in some industries are being exposed needlessly to toxic atmospheres which, in due course of time, will render them unfit for further work. This may require payment of compensation in seemingly large amounts, but actually far less than the person's productive worth. State compensation groups, the legislatures, and labor organizations are cognizant of these facts and industry must show a proper attitude toward maintaining a healthy work place in the shop.

A common source of dust in the enameling process is the mixing of the enamel materials in the mill room. Handling bags of frit, clay and other dry ingredients in preparing the ad-

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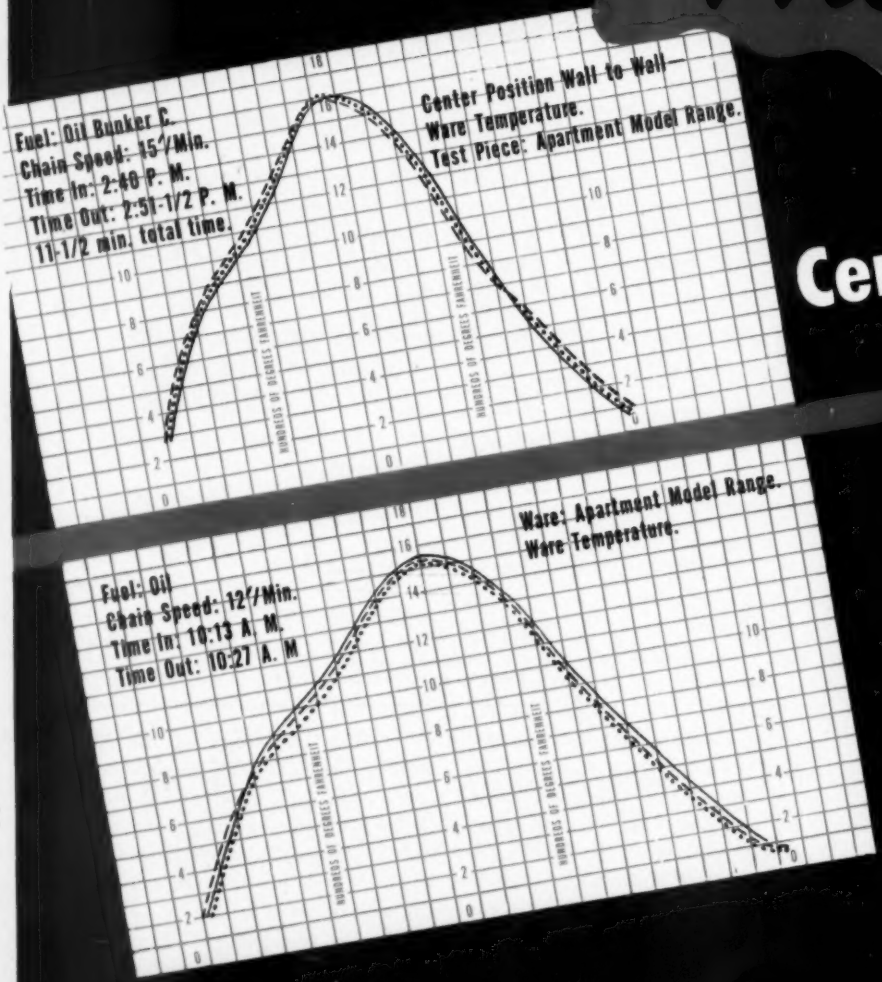
HERE'S THE PROOF!

Center Wall



Top left: Curve shows even horizontal heat distribution on both sides and center of the ware.

Bottom left: Curve shows vertical temperature gradients recorded simultaneously at top, center and bottom of the ware.

Examine the curves above. Note how closely the temperature gradients (both vertical and horizontal) parallel each other. At no place on the ware does the temperature vary more than 20 degrees from the time the ware enters and leaves the "hot zone". That's the kind of heat distribution we've all been looking for!

Such uniform heat distribution is possible because Ferro Continuous U-type Furnaces, with Center Wall Muffle, have more than 40% additional radiation area. This results in balanced heat distribution at all points on the ware . . . exceptional heating efficiency (through increased utilization of combustion) . . . plus lower operating costs and extended refractory life.

If you are considering a new furnace or want to improve the efficiency of your present installation—have Ferro engineers tell you more about this new, tested and proved Center Wall Muffle furnace construction. Write today for details.

→ *from Page 49*

ditions for the enamel slip can create very high dust counts in the breathing zones of workers so employed. From information at hand, it is evident that enameling dusts do not contain high concentrations of free silica (SiO_2). Nevertheless, the plant manager and his staff cannot overlook the fact that there is a potential hazard that can result from inhaling small amounts of free silica over long periods of time. From the table, it can be seen that silica bearing dusts are limited to a definite number of particles per cubic foot of air allowed for inhalation in a scheduled 8-hour working day. To avoid compensation and legal claims resulting from questionable exposure to workmen, management should consider installing exhaust ventilation equipment, or to provide approved respirators for mill room employees who handle dusty material.

Spraying of enamel slip can also be the cause of high dust exposure to the sprayer. This is particularly true when the operator is spraying into a cabinet or concave surface which allows the material to bounce back into his breathing zone. For this reason, it is well to do all spraying work in exhaust ventilated spray booths. An ingenious air line helmet, providing 6 cubic feet of clean washed air per minute, was devised so that the operator can wear it at all times while spraying. This helmet protects him from inhaling any of the dusts resulting from spraying process.

Another source of dust in the porcelain enameling plant is the brushing of enamel from the edges or surfaces of ware leaving the drying ovens. In many cases portable revolving brushes are used, and in other instances hand brushes are used at elevations above the workers head which allows dust to fall into his breathing zone. Here again it is recommended that well designed exhaust systems be installed or that approved respiratory equipment be provided.

Mist and vapors

Cleaning of the ware prior to enameling can cause mist or vapor to be created in the plant atmosphere. For these reasons, all toxic materials and heated tanks of non-toxic materials in the pickle layout should be exhaust-ventilated. If there is any doubt regarding the need for exhaust ventilation, acid and alkali vapors when inhaled dispell the doubt. These materials cause severe irritations of the membrane of the nose and throat and also irritate the eyes. Heated tanks of liquid which cause steaming are generally ventilated in order that humidity in the plant can be controlled at a satisfactory low level.

Gases

An occasional source of complaint is the gases from drying ovens in connection with the pickling and firing of enamel ware. Gas fired ovens can be a source of carbon monoxide as well as irritating combustion products of the burned and unburned gas. Another source of complaint is from gases arising from the furnaces. Fluoride bearing enamels can be the cause of irritating fluorine gases. This complaint is noticed usually by maintenance workers required to service conveyor lines running through the furnaces. Such gases are toxic in low concentration and cause severe irritation of the respiratory system and the eyes. For these reasons it is well to provide exhaust ventilation, or at least exhaust stacks, on furnaces and ovens.

Airborne wastes outside the plant

Atmospheric contamination by trade wastes has passed the "matter of fact" stage and now is entering the "matter for concern" era. Mounting public opinion is beginning to crystallize and rain down upon managements whose plants are the worst offenders. For many years only those industries whose airborne wastes were toxic to persons and vegetation in neighboring communities have been required to take necessary control procedures. Today the finger is pointed toward all manufacturers and others who create neighborhood nuisances, either in the form of odors, dusts, mists, fogs, or smokes. We must evaluate our problems in this new light.

Two articles which may be referred to on the subject of atmospheric contamination are "Atmospheric Trade Wastes," by Phillip Drinker, of the Harvard School of Public Health, and "Engineering Considerations in Air-Pollution Control," by W. C. L. Hemeon, of the Industrial Hygiene Foundation of Mellon Institute. These two articles summarize the situation and suggest known solutions.

Prevention of atmospheric contamination

A logical approach to controlling atmospheric waste discharges would be a survey of all exhaust stacks on the roof. Each stack should be numbered, and data regarding the quantity and type of discharge tabulated. From these data separate lists may be prepared of harmless, doubtful, and obnoxious discharges. Chemical and physical analyses will reveal additional information regarding the seriousness of the problem.

Attention should be directed towards the collection of dusts from exhaust spraying booths, sand blast booths, brushing rooms, and from the mill room. Such dusts can be a neighborhood nuisance. Wash systems are recommended for removing acid, alkali and cyanide vapors from the pickle system since any of these materials can be harmful or undesired in the surrounding neighborhood atmosphere. Gases in the stacks from ovens and furnaces usually are dilute and do not require attention.

In summary, airborne wastes are a subject of concern in many cases depending upon the individual plant problems, and should be evaluated by a competent person in order that the porcelain enameling plant can maintain an atmosphere both safe and free of annoying substances. Airborne wastes can be a detriment to the public relations efforts of any plant whose management is either unaware or uninterested in community welfare.

(1) M. M. Ellis, "Detection & Measurement of Stream Pollution," Bulletin 22, Bureau of Fisheries, U.S. Department of Commerce.
M. M. Ellis, "Industrial Wastes & Fish Life," Proceedings of the First Industrial Waste Utilization Conference, Purdue University, 1944, Page 126.
(2) W. E. Ricker, "Industrial & Domestic Waste in Relation to the Aquatic Life of Indiana Streams," Proceedings of the Second Industrial Waste Conference, Purdue University, 1946, Page 90.

Adapted for finish *from a talk before the Tenth Annual Forum of the Porcelain Enamel Institute.*

The Washington round-up

By Wilfrid Redmond

THE keynote of the Administration's economic program since November 2 has been that "Business Has Nothing To Fear". President Truman was asked at a recent White House press conference if Representative Sam Rayburn's statement to this effect was shared by the White House. Mr. Truman countered by asking if business has had anything to fear for the past three and a half years.

The "business-has-nothing-to-fear" program is undoubtedly based upon the Administration's intention to ask for standby price and allocation controls. Business, in this case, will have nothing to fear unless, from the Government viewpoint, shortages develop or prices are too high.

Economic controls program

The President has selected Economic Adviser Edwin G. Nourse to direct the economic controls program before Congress. Nourse said after his appointment there would be no re-appearance of OPA. However, authority to impose controls must be vested in some Government agency, and that agency would be akin to OPA. It is considered unlikely that Congress will want to retain authority to determine when controls are to be imposed. Government agencies are traditionally unwilling to administer laws where their area of authority is restricted by Congress.

The recent action by the President in selecting John R. Steelman, Assistant to the President, to direct the National Security Resources Board is significant. Mr. Truman said that Steelman would take over the important job of integrating more closely the work of the Board within the framework of the Presidential responsibilities. It looks like Steelman, who directed the Office of Economic Stabilization and the Office of War Mobilization and Reconversion during the war, may be taking over NSRB to prepare the way for administration of the President's Economic program as well as the national resources mobilization program.

After a conference with the President recently, Secretary of Commerce Charles Sawyer, went before the National Association of Manufacturers in New York to give the worried industrialists a hint of what they may expect in the shape of economic controls.

Sawyer said that it seems likely that an allocation program may be needed for some time in some industries that are producing at or near capacity, such as iron and steel, the nonferrous metals, petroleum, construction, transportation, and electric power. On this particular point Sawyer did not specify whether or not he meant continuation of voluntary allocations or establishment of mandatory controls. Later, however, he told the NAM that another enlargement of the military program would require teamwork and restraint of all the people if they are to avoid controls.

Allocation of scarce commodities cannot alone check inflation

Allocation of scarce commodities to key industries, Sawyer said, will not of itself be sufficient to check inflation. In some cases price increases have been greater than necessary, the Secretary said. Where this condition is found to exist, the Secretary intimated, price controls will have to be imposed to check the inflationary spiral.

From the advance information thus allowed to leak out on the Administration's economic program, it is apparent that business will be given an opportunity to get its house in order with a policeman standing on the corner to straighten things out in case prices get out of line or there are shortages that business cannot adjust of its own accord.

Business has not been slow to anticipate what the Administration and the new Congress may do to control the inflation-ridden economy. The first indication of this was the first meeting of the Steel Products IAC with the Office of Industry Cooperation after the November election. The steel company representatives approved all programs proposed by the Department of Commerce, some of them proposals that had been rejected at the October meeting of the committee. Furthermore, the Steel Products group, without any delay, agreed to the extension of a number of programs beyond February 28, 1949, when the voluntary agreements Act, Public Law 395, expires. A provision in the law permits the continuation up to six months of programs in effect before February 28. Prior to November 2, the Steel Products IAC, was cool toward the extension of any but military programs beyond the expiration date. The present strategy is to have in operation beyond February 28 all requested voluntary programs, so that the steel industry can point out that all essential uses of steel are provided for and mandatory controls on distribution are not necessary. However, it is unlikely that this strategy will overcome the wishes of the Government economic agencies to control the steel industry.

Reports that prices are on the decline have also been numerous since November 2, which is taken to be industry's reaction to the probability of the enactment of standby price controls.

Price increases, such as those which recently took place in the case of zinc, are considered to be the first objective of the price control program which the Congress is expected to approve. There is always the possibility, of course, of a "maverick" Congress, but it is not believed by the Democrats that any such coalition will develop in the first session of the 81st Congress, such as decimated OPA in the 79th Congress.

Prior to the November election it was considered more than likely that the residual wartime controls over tin and antimony might be relaxed at the expiration of the present decontrol Act. Now, however, it is certain that tin and antimony will remain under Government control until the domestic economy is freed from shortages of these metals. It is also probable that lead will be placed under allo-

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JANUARY IS THE MONTH TO LOOK . . .

BACKWARD & FORWARD

—AND 1949 IS THE YEAR TO WIN MORE BUSINESS WITH PORCELFRIT!

● Even mistakes have value—if you profit by them. Look back over 1948. Did you *insure* your enameling results by using plant-tested PORCELFRIT? If not, there's your Number One New Year's Resolution—and it's an easy one to keep.

Now look ahead to 1949. You'll have enough to devil and plague you without worrying about the quality of frit you use. When you specify PORCELFRIT you get a product not only exhaustively tested in the laboratory but also put to daily use right in our own job enameling plant, so we *know* it's right. In addition, with no obligation you have the services of Ing-Rich Ceramic Engineers to make sure that PORCELFRIT works in your plant. Let 1949 bring you bigger sales and firmer friends—with plant-tested PORCELFRIT!

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NEWS

Philco purchasing Electromaster

Philco Corporation has signed an agreement to acquire the net assets of Electromaster, Inc., manufacturers of electric ranges, subject to approval of Electromaster stockholders, it was announced by William Balderston, president of Philco, and R. B. Marshall, president of Electromaster.

In exchange for the plant facilities, patents, and other assets of Electromaster, Philco will tender 68,212½ shares of its authorized but unissued common stock, or 1 share of Philco for 8.796 shares of Electromaster, after giving effect to the declaration of a 7% stock dividend on Philco common stock payable on December 14, it was stated.

Binks establishes customer service department

J. F. Roche, president of Binks Manufacturing Company, manufacturers of spray finishing systems and water cooling equipment, recently announced the establishment of a customer service department. Under the new system, incoming calls and correspondence requesting information are channeled directly to that department.

General manager of Floyd-Wells Company dies

Ernest Bancroft, Jr., general manager and assistant treasurer of The Floyd-Wells Company, Royersford, Penn., died recently. He was associated with the firm since 1936.

Bancroft was president of the Manufacturers Protective and Development Association, and a member of the board of trustees of the Institute of Cooking and Heating Appliance Manufacturers.

Herman Cook joins Ferro

finishfoto

C. D. Clawson, president of Ferro Enamel Corporation, has announced the appointment of Herman L. Cook to the company's sales and service organization as sales engineer. A University of Illinois graduate in ceramic engineering, Cook has had 24 years experience in the porcelain enameling industry. Temporarily, Cook will have his headquarters at Ferro's Chicago office.

Metalwash opens new office on West Coast

The Metalwash Machinery Corporation has announced the opening of its new western office at 1130 West Olympic Blvd., Los Angeles 15, Calif. It was announced that J. Sigmund Berlie will be in charge of the office. Berlie has had many years of experience in the metal working industries, especially in washing and pickling of metal parts, and is reported to be available for consultation and information regarding all types of metal washing, pickling, drying, and processing machinery.

AWIMA to meet January 4

The American Washer and Ironer Manufacturers' Association announced that its annual meeting will be held at the Morrison Hotel, Chicago, January 4, which is the opening week of the Chicago homefurnishings winter market. There will be a morning and afternoon session and a banquet, all in the Terrace Casino, preceded by an executive committee meeting at the hotel on the afternoon and evening of January 3. Roy A. Bradt, vice president of Maytag Company, is president of the Association.

DeVilbiss school of spray finishing announces course schedules

Maintained as a service to users of DeVilbiss equipment, several extensive one-week courses for industrial finishers are again included in the DeVilbiss School of Spray Finishing curriculum, according to a company announcement. These tuition-free courses on function, care, and operation of spray finishing equipment combine classroom instruction and demonstration with actual use of the equipment.

Identical courses, lasting one week each, will begin January 10, February 21, March 7, May 2, and June 20. Since class size is necessarily limited, it is indicated as advisable to write for reservations as early as possible to The DeVilbiss Company, 300 Phillips Avenue, Toledo 1, Ohio.

Thirteen Wyandotte representatives receive 25-year awards

Thirteen sales representatives of the J. B. Ford Division of Wyandotte Chemicals Corporation recently received gold watches commemorating 25 years of service for the company.

This brings to 1342 the total number of Wyandotte employees who have won quarter-century honors.

In making the awards, E. M. Ford, president of Wyandotte Chemicals, told the 400 employees, supervisors, executives, and officials attending the banquet "These watches are a symbol on our fifty-eight anniversary of the contribution that you have made to the company, and to our country—the world's most successful enterprise."

Foote Mineral executive in Europe on research trip

Gordon H. Chambers, vice president of Foote Mineral Company, is on an extended trip to Scandinavia and Western Europe where he will contact manufacturers and processors of lithium and other specialty minerals, and investigate and report on technical advancements developed since the war, according to a report. Chambers joined Foote Mineral in 1928.

Pemco completes new research laboratories

Pemco Corporation, Baltimore, completing the third phase of a post-war program of modernization and expansion of its laboratories, has announced the completion of a new $50,000 Research and Development Laboratory now in use by staff members conducting research and development work on the company's products; chiefly, porcelain enamel and glaze frits, porcelain enamel, glass enamels, pottery and glass colors, and ceramic chemicals.

Shown here is section of new twin section "Chemical Laboratory", one of the 12 laboratories for various phases of ceramic research.

Dr. G. H. Spencer-Strong, vice president and director of research for Pemco, in making the announcement, stated "The new laboratories, located at 2552 Greenmount Avenue, has been built away from the main plant, located at 5601 Eastern Avenue, in line with the present industrial trend to separate laboratories from office and plant locations to better enable the research staff to devote their entire time to research and development problems with the minimum of interference." "However," he added, "the move will in no way impair the efficiency of product control and customer service operations since the company's customer service and control laboratories will remain at the main plant."

The new laboratory has approximately 10,000 square feet of floor space and contains 12 completely equipped laboratories for various phases of ceramic research — a research library, staff offices, and conference rooms. The porcelain enamel laboratory has been expanded and at present consists of three separate and distinct laboratories, each one so designed that all types of porcelain enamels can be applied and fired under conditions simulating actual plant conditions. Laboratories have been provided for greatly expanded research and development work in the fields of glass enamels and inorganic colors for all types of ceramic ware. Improved facilities for batch mixing, smelting, and milling have been provided as have a new and completely equipped chemical laboratory and a complete physical properties laboratory which includes not only facilities for physical, optical and color measurements but also facilities for photographic and metallographic work.

Concurrently with the opening of the Research and Development Laboratories, it was announced that the Customer Service and Quality Control Laboratories have been expanded and revised so that all operations are concentrated in a single area. Considerable new equipment, including a laboratory-size continuous enameling furnace, has been provided, it was stated.

Section of "Physical Laboratory" which has facilities for physical, optical and color measurements as well as for photographic and metallographic work.

Washer industry sales report

Factory sales of household washers passed the total for all 1947 early in November, 1948, according to an announcement by the American Washer and Ironer Manufacturers Association, but October's figure of 382,400 units was down 11.8 per cent from 433,919 in September, the industry's all-time high month.

Materials handling show in Philadelphia, Jan. 10-14

The broadest conference on the problems of materials handling in industry ever conducted will be held at Convention Hall, Philadelphia, January 10-14, under the sponsorship of the American Society of Mechanical Engineers, it has been announced by Curtis H. Barker, Jr., general chairman of the conference and president of the ASME materials handling division.

The conference will be held concurrently with the Materials Handling Show where 225 exhibitors will display the latest models of conveyors, monorails, hoists, lift trucks, hand trucks, portable elevators, stacking units, cranes, tractors, trailers, fork trucks, skids and pallets and accessories.

A feature of the conference will be a story of the Army's gigantic materials handling problem in connection with the Berlin Air Lift, an operation unparalleled in materials handling history.

Patterson Foundry appoints equipment division sales mgr.

Joseph W. Kelley has been appointed division sales manager of the Special Equipment Division of The Patterson Foundry & Machine Co., according to Richard L. Cawood, president. He will be in charge of the sale of specially designed chemical and process apparatus.

Kelley was formerly assistant sales manager of Goslin-Birmingham Co., Birmingham, Ala. He is a chemical engineer and a graduate of the University of Alabama.

Formed metal plumbing ware association dissolves, PEI division formed

Dissolution of the Formed Metal Plumbing Ware Association was completed simultaneously with the mass transfer of the Association's former members, all of which were individual company members of the PEI, to a special division of the Institute. The new PEI division, consisting of representatives of practically the entire steel plumbing ware industry, was incorporated during a recent meeting as the Steel Plumbing Fixture Division of the Porcelain Enamel Institute.

According to the Division, the previous organization had been strictly an informal association of industry members which was unchartered, and which functioned without officers or a home office. Its purpose had been to accomplish united action in matters of Federal specifications, commercial standards, etc.

The members, Mr. Depperman said, were desirous of taking part in the continuous program of organized functions and activities which the PEI carries on to promote the major interests of the entire porcelain enameled product industry and its suppliers.

"Gene" Walters promoted to district manager by Chicago Vit

E. P. "Gene" Walters has been promoted to district manager of the southwest territory of Chicago Vitreous Enamel Product Company, with headquarters in St. Louis, it has been announced.

Joining the firm in 1935 as an enamel shop spray helper, Walters learned the enamel business from the bottom up. He spent a period of training in the firm's Research Laboratories. During the war he was in charge of a machine shop, production control, and was a personnel manager in the company's war-time program. Since the war he has been a service man for the company, it was stated.

Gerity-Michigan secures sales rights for Dishmaster

Gerity-Michigan Corporation has secured exclusive sales rights for the Dishmaster, a modern kitchen sink fixture for washing dishes, James Gerity, Jr., president, announced recently. For some time, Gerity-Michigan has been manufacturing parts for the Dishmaster.

New head of Florence Stove

Robert H. Taylor has been elected president by the board of directors of Florence Stove Company to fill the vacancy caused by the death of Edward F. Dobson.

Taylor, who was vice president in charge of sales and a director of the firm, joined the Florence organization in 1932 soon after his graduation from Northwestern University.

"Aqualized" gums

Gum Tragacanth, Locust Bean (Carob) and Karaya now can be

"dissolved" in a matter of minutes as a result of a new process developed by Glyco Products Co., Inc., 26 Court St., Brooklyn, N. Y., and Natrium, W. Va. Known as "Aqualized" Gums, the new Glyco products are said to represent the first major improvement in the processing of vegetable gums in over 2000 years.

Ferro training course graduates 24

The second 1948 session of the Ferro Training Course for process control men recently graduated 24 "students" at the company's laboratories in Cleveland. Director of the two weeks' short course was "Ed" Hansen, manager of Ferro's Los Angeles plant and a past president of the American Ceramic Society.

Emphasis was placed throughout on the practical application of control theories and procedures. Classroom exercises included lectures, visual aids and demonstrations while in the laboratory sessions students were afforded the opportunity of performing the control operations themselves.

The graduates were: Robert Ahlf of Seeger Refrigerator Company; George Aneloski, J. L. Campbell, and Robert Thornton of Hotpoint, Inc.; Robert W. Campbell, Phil H. Cobbs, Walter L. Fox, F. W. Hale, James F. Matthews, Dale O. Myers, Clifford Paltzer, and Robert C. Thompson of Maytag Company; Girard T. Carter of Grand Home Appliance; Anthony Osso, Estate Heatrola; Donald Davis of Ferro; W. C. Davis of Florence Stove Co.; Leaman Doherty and William F. Fisher of Enterprise Foundry Co.; William J. Joyce of Shirley Corporation; Augustus R. McCall of Heintz Mfg. Co.; Fred Strassler of Columbian Enameling & Stpg. Co.; Richard Vernocy of Allied Engineering Div., Ferro; and Michael J. Small and Kenneth Walker of C. V. Hill & Co.

Match this for a welcome

Sales representatives calling on the Automatic Washer Company, at Newton, Iowa, find their way

smoothed by a card which lists the buyers and the nature of their interests, other personnel, states buying hours and various company practices, and then ends up with this:

"If while visiting us you should care to utilize the services of a stenographer or if we can be of any other service, just make your wants known. A private telephone booth also is available for your convenience. How about a Coca-Cola, Pepsi-Cola or 7-Up on the house? Ask the receptionist."

Briggs "hits the jackpot"

Briggs Manufacturing Company has found a way to cash in on the radio "give-aways". A Briggs Beautyware bathroom is included in the loot currently offered on the "Hit the Jackpot" program on Tuesday nights over CBS. Millions of radio listeners heard Briggs Beautyware mentioned on the November 30th program, and will continue to hear the Briggs name until some fortunate quiz participant wins the jackpot.

Duncan joins EUMC

The Enameled Utensil Manufacturers Council, an association of the major manufacturers of porcelain enameled utensils, has announced the appointment of William A. Duncan as director of promotion for the industry.

Air Force project at Alfred U. to be continued in 1949

The Air Force Project, a research program started at Alfred University in 1946, will continue until Nov. 14, 1949, under a renewal contract announced recently.

The project is designed to develop materials capable of withstanding extremely high temperatures in jet engines and rockets. It is being carried on by the College of Ceramics under a contract with the Air Material Command.

In announcing the one-year contract renewal, Dr. Charles R. Amberg, head of the Department of Ceramic Research, said that six persons are employed full-time and three part-time in the development program. James Tinklepaugh is project director.

Dybvig firm now called Vitracon Construction Co.

Vitracon Construction Co. is the corporate name of the organization established by Roy E. Dybvig for the installation of architectural porcelain enamel.

The firm, located at 5177 W. Washington Blvd., Los Angeles 16, Calif., was formerly known as Dybvig Porcelain Company.

William F. Bach has joined his staff at Bendix Home Appliances, Inc., according to V. C. Rice, director of manufacturing. He will handle special assignments. Formerly with the Perfection Body Company, Galion, O., as assistant works manager, Bach has spent 16 years with various manufac-

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You are in Good Company

"Old Timers" in the P.E.I.

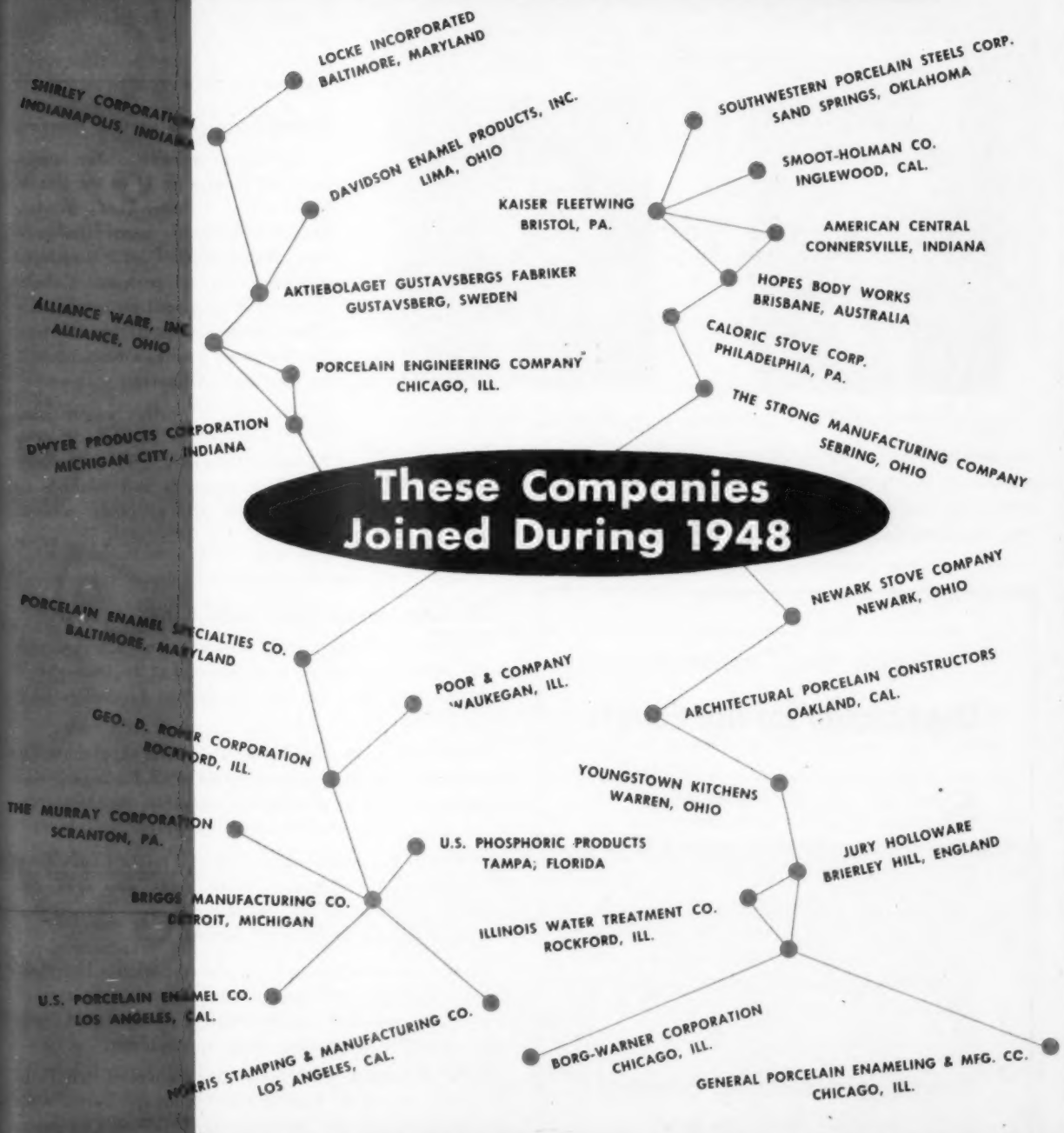
Armco Steel Corporation
Middletown, Ohio
AllianceWare, Limited
Vancouver, Canada
Barrows Porcelain Enamel Co.
Cincinnati 12, Ohio
Bettinger Enamel Corporation
Waltham, Mass.
Binks Manufacturing Company
Chicago 12, Illinois
Albert J. Boland Company
St. Louis 1, Mo.
California Metal Enameling Co.
Los Angeles 22, Calif.
Carnegie-Illinois Steel Corp.
Pittsburgh 30, Penn.
Century Vitreous Enamel Co.
Chicago 38, Ill.
Ceramic Color & Chemical Mfg. Co.
New Brighton, Penn.
Chicago Vitreous Enamel Product Co.
Cicero 50, Ill.
Cleveland Porcelain Enameling Co.
Cleveland 4, Ohio
Dana Chase Publications
Chicago 1, Ill.
DeVilbiss Company
Toledo 1, Ohio
B. F. Drakenfeld & Co., Inc.
New York 7, New York
Ellwood City Iron & Wire Co.
Ellwood City, Penn.
The Enamel Products Company
Cleveland 8, Ohio
The Erie Enameling Company
Erie, Penn.
Ingram-Richardson Mfg. Co. of Ind., Inc.
Frankfort, Ind.
Inland Steel Company
Indiana Harbor, Ind.
McDanel Refractory Porcelain Co.
Beaver Falls, Penn.
McMath-Axilrod Corporation
Dallas 10, Texas
Metal & Thermit Corporation
New York 5, N.Y.
Pacific Coast Borax Company
New York, N.Y.
Pemco Corporation
Baltimore 4, Md.
Porcelain Metal Products Co.
Carnegie, Penn.
Porcelain Metals Corp. of Louisville
Louisville 10, Ky.
Porcelain Steel Corporation
Connersville, Ind.
Raymond Bag Company
Middletown, Ohio
Republic Steel Corporation
Cleveland 1, Ohio
Rohm & Haas Company
Philadelphia 5, Penn.
Seaporcel Porcelain Metals, Inc.
Long Island City, N.Y.
J. M. Seasholtz & Sons, Inc.
Reading, Penn.
Tennessee Enamel Mfg. Co.
Nashville 9, Tenn.
Texas Mining & Smelting Div. of
National Lead Co.
Laredo, Texas
Texlite, Inc.
Dallas 9, Texas
Ervite Corporation
Erie, Penn.
Ferro Enamel Corporation
Cleveland 5, Ohio
Ferro Enameling Company
Oakland, Calif.
Harshaw Chemical Company
Cleveland 6, Ohio
The O. Hommel Company
Pittsburgh 30, Penn.
Industrial Enameling, Inc.
New Orleans 6, La.
Ingram-Richardson Mfg. Co.
Beaver Falls, Penn.
Titanium Alloy Mfg. Co.
Niagara Falls, N.Y.
Vitreous Steel Products Co.
Cleveland 5, Ohio
Vitro Manufacturing Company
Pittsburgh 4, Penn.
Wolverine Porcelain Enameling Co.
Detroit 10, Mich.
Youngstown Sheet & Tube Co.
Youngstown 1, Ohio

FOREIGN

B. B. Kent, Limited
London, E. 14, England
Scott Brothers, Limited
Christchurch, C.1, New Zealand

Genuine
PORCELAIN ENAMEL
"THE LIFETIME FINISH"

...in the P.E.I.



PORCELAIN ENAMEL INSTITUTE, INC.

1010 VERMONT AVE. N. W., WASHINGTON 5, D. C.

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turers in the production of home appliances.

Plant management changes at Cribben & Sexton

Cribben and Sexton Company, of Chicago, manufacturers of Universal gas ranges, have announced the appointments of Harry R. Lehman as factory manager and Joseph A. Nagelberg as purchasing agent.

Harry R. Lehman

Joseph A. Nagelberg

Lehman has been engaged in plant supervisory work for the past 21 years, with most of that time spent as general superintendent of J. I. Case plants. Prior to joining Cribben and Sexton, he was vice president in charge of production for Adel Precision Products Corp., of Burbank, Calif. Nagelberg joined the firm in 1942 as assistant superintendent of maintenance. He was promoted to assistant purchasing agent in January, 1947.

Winter furniture market, January 3 to 15

The 1949 winter homefurnishings market, held at The Merchandise Mart and the American Furniture Mart, Chicago, will be held from January 3 to 15.

Philadelphia ACS section meeting

The second meeting of the season was held November 11 at the Franklin Institute. Colonel D. C. Tredennick, General Staff, Army Headquarters, Washington, D. C., addressed the group of 50 persons. Colonel Tredennick had been an intelligence officer in the Pacific during the war. He illustrated with two films his talk on the Pacific Campaign.

The technical portion was handled by representatives of the Simonds Abrasive Company. W. F. Graden described materials and methods of manufacture of grinding wheels.

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Chicago enamelers talk "safe transit"

The national "safe transit" program and a technicolor movie on steel production were featured at the December 4 luncheon meeting of the Chicago District Enamelers Club at the LaSalle Hotel.

Ralph Bisbee, of Westinghouse Electric Appliance Division, and general chairman of the PEI Packaging and Shipping Committee, presented a slide-film demonstration on progress of the "safe transit" program.

A. L. Green, special representative, Freight Claim Division, Association of American Railroads, also spoke on "safe transit," stating that the railroads were pleased that the program was initiated by industry.

Edward Mackasek, managing director of the Porcelain Enamel Institute, said many manufacturers were amazed at the "utter simplicity of the project" which should "help other industries solve their shipping problems."

G. W. Hofstetter, Club president, announced that F. L. Meacham, Dr. A. I. Andrews, and Rudyard Porter were appointed to the new Inter-Society Relations Committee of the Chicago Technical Societies Council.

Wayne Deringer, past Club president, reported that the theme of the 1949 Technical Societies' Production Show (date to be announced later) is "What's New?".

The meeting was closed after the showing of U. S. Steel's technicolor movie "Steel — Man's Servant."

The Washington round-up

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cation if the present shortage develops serious aspects.

The Munitions Board reports that industry is cooperating in a most satisfactory manner in setting aside copper, lead, and zinc for the stockpile. The three industries agreed to negotiate with the Board after the Office of Industry Cooperation had proposed a voluntary allocations program. The producers and importers of the three metals told OIC that rather than go through the complicated procedure set up for the development of a voluntary allocations program under Public Law 395 they would prefer to work out contracts with the Munitions Board and the Bureau of Federal Supply directly. The Board reports that there is no longer any problem as far as meeting this year's goals of copper and zinc stocks are concerned, and that it looks like lead will be available for the strategic stockpile as required also.

OIC and the Steel Products IAC, for more than a month, have put aside further consideration of steel allocations for housing. It was believed that the allocations program was top-heavy in housing allocations, so some housing products groups were turned away. Now, however, OIC will begin soon to review the housing field, and will start with warm air heating and plumbing drainage goods requirements. There is, at this time, no announced plan to continue allocations for steel houses beyond the expiration date, February 28. This program, however is likely to come up for an extension if the prefabricated steel house industry can show that it is producing houses in any substantial quantity for the low income groups. As a rule, the allocations programs now in effect, such as the steel house allocation, are being extended beyond February 28 in the same amounts as currently allocated.

With the enactment of allocation and price controls, which some industry forecasters are saying will be by March 1, it is understood housing construction will carry the same priorities for materials which were included in the housing program during the war.

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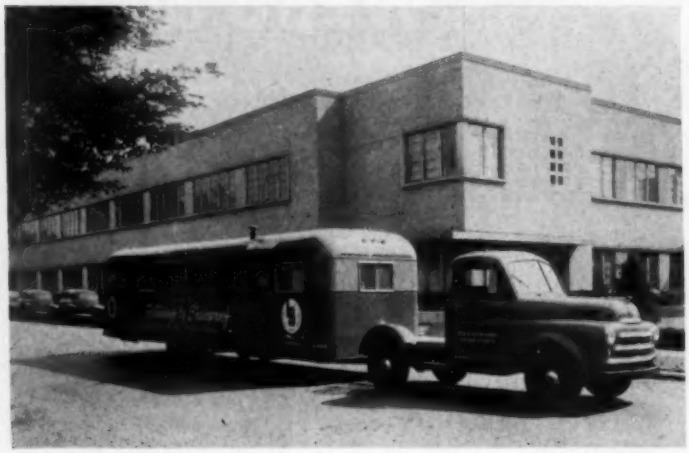
James Price described and showed many slides of thin-section microscopic examination of special bonds and sections from abrasive wheels.

Shakeproof launches traveling laboratory



Shakeproof, Inc., Chicago, manufacturer of fastening devices, recently completed an automatic trailer unit to serve as a mobile demonstration of modern fastening methods and devices.

The trailer interior is arranged to provide a small lounge at the front and a clear aisle between front and rear side doors. Both walls on either side of aisle are lined with exhibits and testing equipment to illustrate and demonstrate fastenings and fastening techniques. Actual fastening applications on familiar products and sub-assemblies are featured. In addition to visual and operating demonstrations, the trailer is equipped for sound motion picture projection to a limited audience.

Porcelain Enamel trend seen in spectaculars

A growing preference for porcelain enamel in outdoor advertising is evidenced in the choice of a porcelain enameled base and lettering for a spectacular sign recently erected in Pittsburgh, Pa., by Pittsburgh Outdoor Advertising Co.

Built on a prominent corner in downtown Pittsburgh, it required a lasting finish which would not streak or fade; also, the dust-laden Pittsburgh air demanded a material which could be easily cleaned. The porcelain enamel finish also furnished adequate reflection for night illumination.

The construction of this sign, like the use of porcelain enamel frames for 3,000 24-sheet outdoor poster boards erected in 1947, shows the growing acceptance by the outdoor advertising industry of porcelain enamel. The conversion of 300,000 boards *(see "Porcelain Enameled Mouldings for All-Steel Poster Panels," finish, August, 1947)* throughout the country with porcelain enamel frames is the industry's present goal.

North Carolina State news

The beginning of a current college year at North Carolina State College indicated that registration in the department of ceramic engineering has continued to increase. Over 76 students are enrolled. This is the largest number of students that has ever been enrolled in this department at one time. The department recently celebrated its 25th birthday, making it the oldest Ceramic Engineering school in the South, it was stated.

As editors continue to urge modernization of laundries, appearance and "finish" will become increasingly important on the appliances used. No longer will the home maker tolerate rusting or discolored parts on her laundry equipment. She will expect these parts to retain the same gleaming finish as does the porcelain enameled tub.

Merchandise Mart street changes name

There is a new street name in Chicago — the broad private street facing The Merchandise Mart and the Chicago River, between Wells and Orleans Streets, officially became "Merchant Mart Plaza" on January 1.

Wallace O. Ollman, general manager of The Merchandise Mart, announced this change in a special notice to all the tenants in The Mart, to their employes, and to the home offices of tenant firms. The change was made, with the approval of the city departments affected, the Chicago Post Office and The Mart management, following many years of study of the name of the street.

Congratulations, sir! Your bandaged beak is a badge of honor!

It's a symbol of service . . . a sure sign that you, like most of us these days, have been keeping your nose to the grindstone—working your hardest just to keep your family living the way you want them to live.

But what of the future? Your nose can't take it forever. Someday you'll want to retire, to follow the hobbies and take the trips and do the things that you've always dreamed of doing.

That's going to take just one thing —MONEY! And will you have it when you want it?

You will if you're buying U. S. Savings Bonds *automatically*—on the Payroll Savings Plan where you work, or on the Bond-A-Month Plan at your bank.

With either plan, you're heading for real financial security. Month after month, regularly as clockwork, your money is saved for you.

It's just about the easiest, surest, fastest way of building financial security that anyone ever dreamed up.

And with U. S. Savings Bonds, you *make money* while you save it. Every $75 Bond you buy today will be worth $100 in just 10 years!

Of course, you can always buy Bonds at any bank or post office.

But the best way, the sure and steady way, is to buy 'em automatically!

Start doing it now! Keep on doing it! And in no time flat, you'll find that you're well on your way to a permanent separation of nose and grindstone!

AUTOMATIC SAVING IS SURE SAVING—U.S. SAVINGS BONDS

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

Sixteenth annual meeting of cooking and heating appliance manufacturers

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for in peacetime is still in prospect as we look ahead into 1949," concluded Kramer.

Selective selling and sales control

"Planning Selective Selling and Sales Control in our Changing Economy," was a title of the address by Luke J. McCarthy, vice president in charge of marketing for Hearst Magazines, Inc.

"Golden opportunities await manufacturers who excite the American people with news of a new product. Good business ideas are to be found only in the *wants* of people. You succeed or you fail to the degree that you understand needs and desires of our millions of buyers," emphasized McCarthy at the outset of his talk to members of the stove industry.

"There are some 'prophets of gloom' who are adverse to change . . . What our businessmen should realize is that we live in a rapidly changing, always progressing country wherein prosperity does not depend upon *any one* political party, and the market for good merchandise is never saturated . . .

"The present flood of changes in people, buying habits, products and competition are of keen interest and great importance to selling organizations . . . Population is shifting from one part of the country to another. Age limits are changing. Millions of marriages in recent years. Births have reached a new peak. Purchasing habits are changing. Family budgets are changing. Consumer preferences are changing. Materials we never saw before are competing with those we thought were basic . . .

"Designs are changing aimed at better product performance. Packaging and packaging materials are changing. Product promotions are changing. . . .

Record national income

"From preliminary estimates, we'll have a record high 220 billion dollar national income this year, and Government economists are predicting an additional four-year period of prosperity. That is fine, and we hope it will pan out that way, but don't let the prospect lull you into a false sense of security. You will have to 'make customers' as ably as you make your products.

"I suggest that an efficient, modern marketing plan is a 'must.' It is the keystone to successful selling . . . Selective marketing means putting selling energy into the markets where it will do the most good, and to concentrate most aggressively, most cannily in the trade areas of volume and velocity.

In summarizing his talk on planning selective selling and sales control, McCarthy stressed the following points:

1. Establishing sales control by consumer "Trading Area Units" in contrast to political lines.
2. Revising sales districts and assigning logical territories of these control units to salesmen.
3. Selecting the principal trading centers in each territory which should receive the greatest amount of sales and advertising energy.
4. Concentrating the time of salesmen in these key cities to obtain greatest results from their time, expense and selling ability.
5. Checking sales performances either by months, quarters, or mid-year periods against sales potentials.
6. Deciding whether present retail distribution is adequate or justified.
7. Determining the sales potential within each trading area unit and comparing it with sales performance.
8. Paralleling all advertising efforts with sales efforts in the most profitable consumer trading areas.

"Let's forget the Metal Finishing Business Mr. McCandless. The experts don't predict a recession until 1949 and that's a whole half hour away."

Now is the time to consult with Monarch's engineering staff regarding the expansion of your production program in the new year.

Be it just a few small stampings or a completely assembled and packaged unit ready for shipment, Monarch's modern facilities and skilled craftsmen are ready to assist you according to your needs. If you have your own dies and materials, Monarch is at your service.

Yours for A Bigger and Better 1949

MONARCH QUALITY

When you think of Stampings, think of

NEW MONARCH MACHINE & STAMPING CO.

406 S.W. NINTH STREET — DES MOINES 9, IOWA

Vitreous enamels for aluminum

(Continued from Page 43)

the stock should be *thoroughly* rinsed and drained. A wood tank or a rubber- or lead-lined steel tank can be used for the acid cleaning bath. There is also a good chance that 316 stainless steel would be satisfactory.

Solvent vapor degreasing may be used on bright sheet stock (not heavily oxidized).

Treating bath

This may be used in a heated steel tank of sufficient size completely to submerge the article to be enameled. Washing equipment should be near to permit *prompt* removal of treating solution and stopping of chemical action. Bath composition is as follows:

	% by weight	lbs./gal.
Chromic sulfate	0.2%	0.02 lb.
Potassium chromate	19.0	1.94
Sodium hydroxide	3.8	0.39
Water	77.0	7.67
	100.0%	10.02 lb.

The potassium chromate and sodium hydroxide are dissolved in most of the water, preferably by placing the chemicals in the tank and adding cold water. Chromic sulfate is dissolved in the rest of the water and the solutions mixed. This forms a slight precipitate which is left in the solution. (Other chromates may be used instead of potassium chromate as indicated in Part II.)

The bath and pretreated stock should be handled with due regard to caustic and chromate contents. Among the precautions suggested are use of goggles and rubber gloves, availability of safety shower, and examination for chromate dermatitis. Adequate ventilation should be provided to prevent an accumulation of the hydrogen gas evolved during operation and to remove a spray which is toxic and has a delayed irritating action on the nose and throat.

Bath operation

After metal articles are cleaned, rinsed and drained, they are then completely submerged in the treating bath for lengths of time and at operating temperatures within the ranges shown as follows:

	43 Alloy	61-S Alloy
Temperature	104° F. ± 5° F.	120° F. ± 5° F.
Time	7 min. ± 1 min.	4 min. ± 1 min.

Following brief drainage of the articles, they should be *promptly* immersed in a tank of water to stop chemical action. They are thereafter thoroughly washed, preferably by hose, until all traces of yellow color are gone. It should be borne in mind that this relatively concentrated treating solution necessitates ample use of clean water for removal and also that *substantially complete washing is essential to good enameling.*

Defective pretreatment

Under-treatment may result in enamel spalling in use but may be detected by adequate use of the accelerated spalling test.

Over-treatment causes excessive corrosion of metal, leaving a thick film of corrosion products which are not penetrated by the enamel. In moderate cases over-treated stock may be enameled satisfactorily after brushing off the loose corrosion products after prefiring. When over-treated or insufficiently washed metal is enameled, the ground coat frequently spalls off on cooling or when the cover coat is sprayed. Such over-treatment leaves a thick film of corrosion products which prevents the ground coat from thoroughly wetting the base metal during firing.

Bath maintenance

Treating bath will require maintenance as a result of drag-out, evaporation or loss of strength through chemical reaction. At present it is believed that 100 sq. ft. of metal surface can be treated per gallon of bath before addition of chemical is necessary, and that 1000 sq. ft. of surface can be treated per gallon before a new bath must be made up. (Drag-out neglected.) In general, it is recommended that the concentration be maintained within the following ranges:

Potassium chromate 17 – 21%

Sodium hydroxide 3.5 – 4.1%

Appropriate additions of water, sodium hydroxide and potassium chromate (or other chromates as indicated in Part II) may be determined by analysis of bath samples. Chromic sulfate does not require replenishment. Failure of enameled articles under the accelerated spalling test may point to bath deterioration and should indicate its discard and replacement.

Preparation of slip

Frits, pigments and mill "addition agent" will be mixed and wet milled by the enameler. Formulas suggested will give cover coats resistant to the action of mild acids unless otherwise noted. Ground coats, however, are not acid resistant. Pigmenting of ground coats is not usually recommended as it may cause spalling, although a small amount of pigment is used in the ground coat for whites to improve reflectance of the cover coat. All the ingredients are charged initially to the ball mill and the grinding completed in accordance with specifications. It is necessary to maintain established grinding specifications to reproduce color and working properties. The slip should be stored in closed cans to prevent evaporation and to keep out dirt. Cans should be kept away from vibration to prevent compacting of solids. While slight evaporation due to storage can be made up, *long storage is not recommended* since results to date indicate a tendency on the part of old slip to give tearing.

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Recommended ground coat slips have the following compositions:

	#WB23 Standard ground coat for 43 alloy	#WB24 Standard ground coat for 61S alloy	#WB35 White ground coat for 43 & 61S alloys
Frit A	100 parts	50 parts	—
Frit B	—	50	—
Frit C	—	—	100 parts
Addition agent L389*	5	5	10
Potassium bichromate	0.17	0.17	—
TiO_2	—	—	6
Water	27	27	43
Milling time (hours)	5	5	10

*Addition agent L389 is a setting-up and anti-tearing agent replacing boric acid and bentonite used in earlier foundations.

These materials are ground in a fully charged ball mill for the times indicated, after which not more than 0.2 gram from a 50 cc. sample should be retained on a 325 mesh screen. Standard ground coats are generally preferred except when a white cover coat is used over white ground coat WB35. However, completely satisfactory results can be obtained when a colored cover coat is used over the white ground coat.

Cover coats

Formulas depend on the color desired and upon the alloy used. Representing 90 to 95% of the dry solids are three types of frit: one for whites and pastels; one for cadmium-containing frit for reds, yellows, oranges, and pinks; and a third for other colors.

These frits, addition agent L389, pigments and enamels should be handled with due regard to their content of poisonous chemicals, especially lead which is present in high percentage in the frits, and also to their high alkalinity. Among the desirable precautions are: avoidance of dust inhalation, wearing of smocks, food not permitted in the working area, thorough washing required of operator before eating, stipple counts on all operators at three month intervals.

Following pretreatment, the stock is prefired under time and temperature conditions the same as used for ground coat firing.

Spraying ground coat

After cooling to room temperature, prefired stock is ground coat sprayed with a thin coat of smooth, wet spray avoiding excess, particularly in corners. In the event that the spray coat is not smooth and wet, the slip should be diluted with water. From 15 to 20 grams per square foot should be deposited. *Spraying must be conducted in a well ventilated booth and operators adequately protected against inhalation of spray.*

Drying ground coat

After spraying, the stock should be dried to prevent dust pick-up. Low temperature drying is desirable. High temperature drying or an excessive drying time may cause tearing. Usually drying need be continued only to the point where surface moisture disappears.

Firing

Dried articles well supported on a suitable rack are then fired to a temperature of 970° – 1000° F. for a minimum period of 5 minutes for small charges of thin section. In production furnaces, firing conditions will depend on load in the furnace, thickness of metal sections, location of the pyrometer and other factors. Care must be exercised to avoid too high a temperature to prevent excessive metal deformation. Too low a temperature or too short firing time or both will result in an inadequately bonded ground coat. This defect shows up by spalling on cooling or spalling during application of cover coat slip. It should also be noted that such failure can result from overtreatment of the metal prior to enameling. Refiring at higher temperature or for a longer period generally corrects under-firing. As the purpose of the ground coat is merely to bond cover coats to stock, a thin application as specified is adequate.

Spraying cover coat

After cooling ground-coated stock to room temperature, the cover coat may be sprayed. Care must be taken to keep ground-coated surface free of grease, oil or finger prints on articles to be enameled in light colors as organic material will burn, leaving dark carbon marks. Cotton gloves may be used for handling stock in process. One such coat will frequently suffice and may be applied to the necessary thickness, again avoiding excess in so far as possible in corners. The total deposit of ground and color coats should be from 40 to 70 grams of enamel solids per square foot. If difficulty is encountered with tearing, it will be necessary to apply two lighter cover coats, separately fired. With non-rigid sections it will be necessary to enamel both sides to prevent warpage. Limited bending back to original shape is usually possible.

Firing cover coat

Firing conditions the same as for standard ground coat (about 970° F.) are usually suitable. Over-firing may result in failure in the accelerated spalling test. It should also be noted that the thickness of cover coat and firing conditions can affect in some degree the color obtained.

Two-color cover coats

It is not expedient to apply multiple color coats by brushing dried enamel from a sprayed coat through a stencil because, on drying, these enamels bond very firmly. Lead dust hazards are also incurred in this operation.

Following firing of a cover coat in one color, it has been found feasible to spray a second coat of another, wipe off excess while partially dry and refire. Multiple coloring can be effected by spraying and firing the first color, then masking and spraying the second color. Multiple designs can also be done by the squeegee process, using specially prepared squeegee inks. Several colors, including the last overall cover coat, can be fired simultaneously.